National Library
of Canada

Acquisitions and
Bibliographic Services Branch

395 Wellington Street
Ottawa, Ontario
K1A 0N4

Bibliothèque nationale
du Canada

Direction des acquisitions et
des services bibliographiques

395, rue Wellington
Ottawa (Ontario)
K1A 0N4

Your file Votre référence

Our file Notre référence

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30, and subsequent amendments.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30, et ses amendements subséquents.

Canada

UNIVERSITY OF ALBERTA

THE PHYSICAL ACTIVITY ENJOYMENT SCALE: RELIABILITY AND VALIDITY

BY

SHONA SCHLEPPE

©

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND

RESEARCH IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF MASTER OF ARTS

IN RECREATION

DEPARTMENT OF RECREATION AND LEISURE STUDIES

EDMONTON, ALBERTA

FALL 1993

National Library
of Canada

Acquisitions and
Bibliographic Services Branch

395 Wellington Street
Ottawa, Ontario
K1A 0N4

Bibliothèque nationale
du Canada

Direction des acquisitions et
des services bibliographiques

395, rue Wellington
Ottawa (Ontario)
K1A 0N4

Your file Votre référence

Our file Notre référence

The author has granted an irrevocable non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of his/her thesis by any means and in any form or format, making this thesis available to interested persons.

L'auteur a accordé une licence irrévocable et non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de sa thèse de quelque manière et sous quelque forme que ce soit pour mettre des exemplaires de cette thèse à la disposition des personnes intéressées.

The author retains ownership of the copyright in his/her thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without his/her permission.

L'auteur conserve la propriété du droit d'auteur qui protège sa thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

ISBN 0-315-88284-0

Canada

UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR: Shona Schleppe

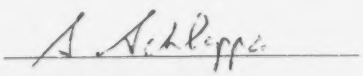
NAME OF THESIS: The Physical Activity Enjoyment Scale: Reliability and Validity

DEGREE: Master of Arts in Recreation

YEAR THIS DEGREE GRANTED: 1993

Permission is hereby granted to the University of Alberta Library to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research purposes only.

The author reserves all other publication and other rights in association with the copyright in the thesis, and except as hereinbefore provided neither the thesis nor any substantial portion thereof may be printed or otherwise reproduced in any material form whatever without the author's prior written permission.



c/o Blue Lake Centre

P.O Box 6150

Hinton, AB.

T7V-1X5

July 19, 1993

UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to Faculty of Graduate Studies and Research for acceptance, a thesis entitled THE PHYSICAL ACTIVITY ENJOYMENT SCALE; RELIABILITY AND VALIDITY submitted by SHONA SCHLEPPE in partial fulfilment of the requirements for the degree of MASTER OF ARTS IN RECREATION.

Dr. Len Wankel

Dr. Linda Thompson

Dr. Larry Beauchamp

June 24, 1993

Abstract

This study examined the reliability and validity of the Physical Activity Enjoyment Scale (PACES) when administered to 223 youth soccer players (mean age = 15.04 years). Subjects were administered PACES immediately following a soccer practice. The analysis on the total sample revealed strong internal consistency (α=.91). A retest was performed a week later on a sample of 42 players and again strong internal consistency (α=.92) was observed. The 7 day test-retest reliability for this sample was r=.76, p<.001. The concurrent validity of PACES was examined by correlating the results of the scale with five single item indicators thought to reflect enjoyment. PACES was significantly correlated with: "will you participate next year" (r=.44, p<.001), "enjoyment of the activity" (r=.36, p<.001), "will you tell your friends" (r=.25, p<.001), "how well did you play" (r=.22, p<.001) and "how challenging was the activity" (r=.18, p<.01). An orthogonal factor analysis, with VARIMAX rotation, produced a one-factor solution which accounted for 43.3% of the variance in the overall sample (45.2% for the male sample; 37.6% for the female sample). The analyses found four items with high loadings (>.5) on the first factor common to all three samples (male, female and total). The overall pattern of results support the reliability of PACES in the organized youth sport environment and provide additional support for the validity of the instrument. Further research is required to establish the validity of PACES and to investigate its applicability for use in unstructured youth activity settings (e.g., informal play settings).

Acknowledgements

This thesis is dedicated to my M and D for their never ending patience, encouragement, belief and freedom. To my brother who provided the childhood competition to encourage me to plummet down slopes, pursue Olympic gold and strive for happiness. To Sylvie for being the best sister anyone could ever wish for!

I would also like to acknowledge my research committee for their understanding and support as I floundered in the world of academia. Sincere thanks to Len Wankel, Linda Thompson and Larry Beauchamp, your assistance and constant scrutiny was appreciated.

Lastly, to all my friends for their support and buffoonery as it provided the balancing ingredient as I struggled over a very challenging hurdle of my life. I am greatly indebted to you all.

Table of Contents

Title page

Abstract

Acknowledgements

Table of Contents

List of Tables

List of Figures

Chapter 1. The Problem 1

1.0 Importance of the Study..... 1
1.1 Statement of the Problem..... 3
1.2 Subproblem..... 3
1.3 Hypotheses..... 3
1.4 Delimitations..... 5
1.5 Limitations and Assumptions..... 5
1.6 Definition of Terms..... 5

Chapter 2. Review of Literature..... 7

2.0 Introduction..... 7
2.1 Participation Motivation..... 7
2.2 Definition of Enjoyment..... 10
2.3 Intrinsic Motivation..... 11
2.4 Achievement Motivation..... 13
2.5 Sources of Enjoyment..... 16
2.5.1 Flow and Challenge..... 16
2.5.2 Competition and Outcome..... 18
2.5.3 Age and Gender Effects..... 21
2.5.4 Influences of Coaches and Parents..... 23
2.5.5 Summary of Review of Literature..... 26
2.6 Development of PACES..... 27

Chapter 3. Research Methodology..... 32

3.0 Investigating Reliability and Validity..... 32
3.1 Pilot Study..... 33
3.2 The Sample..... 34
3.3 Data Collection..... 35
3.4 Data Analyses..... 37

Chapter 4. Results..... 38

4.0 Descriptive Statistics..... 38
4.1 Reliability of PACES..... 44
4.2 Concurrent Validity of PACES..... 47
4.3 Factor Structure of PACES..... 48
4.4 PACES Shortened Version..... 55

Chapter 5. Discussion..... 58

5.0 Discussion..... 58
5.1 The Use of PACES in Different Contexts..... 58
5.2 Gender Similarities and Differences..... 59
5.3 Reliability of PACES..... 62
5.4 PACES Stability Reliability..... 63
5.5 Current Indicators of Enjoyment and PACES..... 64
5.6 The Single Factor Solution..... 68
5.7 The Shortened PACES Instrument..... 70

Chapter 6. Summary and Recommendations..... 72

6.0 Summary..... 72
6.1 Recommendations for Future Study..... 75

References..... 76

Appendix I - Original PACES Questionnaire..... 81
Appendix II - Additional Concurrent Indicators..... 84
Appendix III - Correspondence..... 86

List of Tables

Table

1 Descriptive Statistics for Age and Years of Sport Involvement.... 38

2 PACES Means and Standard Deviations for Different Samples..... 39

3 PACES Item-Total Correlations for Different Samples..... 42

4 Internal Consistency of PACES Scale for Different Samples..... 43

5 PACES Item-means for Total and Retest Samples..... 45

6 Concurrent Validity of PACES for Different Samples..... 48

7 PACES Communality Values for Different Samples..... 50

8 PACES Rotated Factor Matrices for Different Samples..... 53

9 PACES Oblique Structure Matrices for Different Samples..... 55

10 Correlations of the Shortened PACES with the Concurrent Indicators 57

List of Figures

Figure

1 PACES Plot of eigenvalues for different samples..... 53

Chapter 1

The Problem

1.0 Importance of the Study

The attrition rate in youth sport and recreation programs has been an area of concern for sport and recreation practitioners. How can programs be designed to facilitate maximum enjoyment and satisfaction? It is well documented that people are more likely to engage in an activity, repeat a behavior or perform an activity well when they enjoy what they are doing (Graef, Csikszentmihalyi, & Gianinno, 1983). Most individuals become involved in sport for the activity's sake, for fun, enjoyment and pleasure (Wankel & Pabich, 1982). Robertson (1990) emphasizes that 1/3 of youth sport participants withdraw from sports due to a variety of negative reasons (e.g., not fun, boring, too much pressure). In a similar vein, research has investigated the factors related to enjoyment in sport (Scanlan, Ravizza, & Stein, 1989; Wankel & Kreisal, 1985; Wankel & Sefton, 1989) and the importance of enjoyment to involvement (Scanlan et al., 1989). The notion of enjoyment and it's positive association with exercise adherence has received some research attention (Dishman & Dunn, 1988; Wankel, 1985). However, most of the research to date has utilized single item scales of enjoyment which are of questionable reliability. Given the potential importance of enjoyment in sports, physical activity and in exercise adherence, it can be assumed that a multi-item scale assessing individual enjoyment would be a valuable asset to the youth environment.

Recent research by Kendzierski and DeCarlo (1991) has lead to the

development and testing of the Physical Activity Enjoyment Scale (PACES), an 18 item measure developed to assess the extent to which an individual enjoys doing a given physical activity (see Appendix I). The authors report two studies which provide some evidence that PACES is a valid and reliable instrument. However, further research on PACES is necessary to establish the reliability and validity of the scale and its suitability for use with different populations. Kendzierski and DeCarlo's (1991) research was restricted to adult aerobic exercise contexts (jogging on a minitramp and bicycling), future research is necessary to assess the applicability of PACES in other types of activity settings and to ensure it's validity with other populations (individuals of different ages). Studies employing larger sample sizes are required to enable examining the factor structure of PACES and to examine potential gender differences.

This study investigated some of these reliability and validity concerns. The research addressed the following questions: is PACES applicable to different types of physical activity, to either gender, and is it generalizable to other physical activity contexts? However, the main thrust was to investigate whether PACES can be utilized in the youth physical activity or sport environment.

Should the PACES instrument prove to be reliable and valid, it could prove to be a valuable tool for examining the relationship between enjoyment and adherence. It would be useful to recreation and sport practitioners in their attempts to design enjoyable programs and activities for participants.

1.1 Statement of the Problem

The purpose of this study was to investigate the reliability and validity of PACES in a youth sport environment. Is it a reliable and valid tool for measuring physical activity enjoyment? Is it appropriate for use with youth (13-16 year old) in a physical activity (soccer) context?

1.2 Subproblem

Is PACES at the appropriate comprehension level for 13 - 16 year old or should it be modified? Would adjustments and changes distort the validity and reliability of the instrument?

1.3 Hypotheses

1. It was hypothesized that PACES would have high internal consistency. This was assessed by computing Pearson product-moment correlations between each item and the total score (item-total correlations), and by calculating Cronbach's (1951) coefficient alpha as a measure of internal consistency of the scale. In two earlier studies conducted by Kendzierski and DeCarlo (1991), in a structured exercise context with adults, PACES was shown to have good internal consistency. The item-total correlations of the 18 PACES items ranged from $\underline{r}$=.35 to $\underline{r}$=.89. and Cronbach's (1951) coefficient alpha was .90.

2. It was hypothesized that PACES would have strong stability reliability, that is the PACES scores taken at time 1 will have a high positive correlation with time 2 scores, as measured by the Pearson

product-moment correlation coefficient. No evidence has previously been presented for the test-retest reliability of the scale.

3. It was hypothesized that there would be a positive association between an individual's enjoyment score as measured by PACES and that of five other single item indicators thought to reflect enjoyment. Thus, concurrent validity will be demonstrated by a high correlation coefficient (Pearson product-moment correlation) between PACES and (1)How much did you enjoy the activity just completed, (2) How well did you play in the activity just completed, (3) How challenging was the activity you just completed, (4) Will you participate next year and (5) Will you tell your friends about this activity.

4. It was hypothesized that PACES would yield similar results (hypothesis one through hypothesis three) for both male and female samples.

5. It was hypothesized that PACES constitutes a uni-factor scale (i.e., all items would load on one factor). The factor structure of the 18 item PACES will be examined by orthogonal factor analysis.

6. It was hypothesized that the factor analyses performed on the PACES scores for separate female and male samples would yield similar uni-factor results.

1.4 Delimitations

A delimitation is that the study was restricted to participants in a single form of physical activity, the organized soccer program of the Edmonton Minor Indoor Soccer Association (EMSA).

1.5 Limitations and Assumptions

The first limitation comes from the respondents. The general assumption concerning respondents was that they respond to questionnaire items honestly, thoughtfully and in accordance to their actual feelings, attitudes and behaviours.

The second limitation of the study was that participants involved in EMSA (Indoor) are similar to those involved in other youth sport associations.

1.6 Definition of Terms

Physical Activity Enjoyment: an individual's positive affective response to his or her physical activity experience which reflects feelings and\or perceptions such as pleasure, liking and experienced fun (Scanlan & Lewthwaite, 1984, p.32).

Sport: requires that participants execute physical and mental skills which require practice or preparation to improve or correct. It involves competition against other participants, oneself, or nature. It occurs in a structured and organized environment, and is governed by standard rules. It is a recreation activity. (Alberta Recreation and Parks, 1983).

Youth: a category composed of boys and girls between 7 and 16 years of age. This category has been utilized to maintain consistency in respect to other studies on youth physical activity enjoyment (Scanlan & Lewthwaite, 1984; Wankel & Sefton, 1989). This age category also corresponds to the usual age of most participants beginning organized sport.

Chapter 2

Review of Literature

2.0 Introduction

Sport and physical activity seem to be woven into the fabric of our social life. This is evident in Canada as 2.5 million youth between the ages of 6-18 years participate in Olympic and non-Olympic team and individual sports (Valeriote & Hansen, 1988, p.25). This figure is impressive, but how many youth are not participating? How many youth have tried various physical activities and encountered dissatisfaction and disappointment? A study by Dishman (1988) reveals evidence that a sedentary lifestyle is already established in many primary school students. He suggests that the typical American child of school age demonstrates fitness and physical activity profiles below the levels believed necessary to significantly lower health risk (p. 157). To counter this tendency of a sedentary lifestyle it becomes of paramount importance for the recreation and sport practitioner to determine what influences youths to participate and stay involved in informal and organized sport and physical activity.

There has been considerable research on motives for participation in sport and physical activity. Enjoyment and fun, are consistently emerging participation motives often cited by youth in recent studies (Robertson, 1990; Wankel & Kreisel, 1985; Wankel & Sefton, 1989). Scanlan and Lewthwaite (1984) define sport enjoyment as an individual's positive affective response to sport participation. Highlighted in the current literature review, challenge, competence, outcome, age, gender,

and significant others are factors that may influence a youth's level of sport enjoyment.

Often linked with enjoyment is intrinsic motivation. Wankel and Kreisel (1985) in their study of factors related to enjoyment in youth sport interpreted their results as indicating that the most important factors, such as, excitement of the sport, personal accomplishment, improving one's skills and just doing the activity were factors that were intrinsic to the activity.

Nicholls (1978) and Harter (1978), propose that perceptions of competence or incompetence are the critical mediators of performance and persistence. Youth will continue to engage in behaviours that are rewarding (intrinsic), challenging and that offer them success.

Research evidence suggests the above factors should be considered when examining enjoyment in youth sport. The following review of literature will elaborate on a variety of theoretical perspectives linked to sport enjoyment and PACES.

2.1 Participation Motivation

Participation motivation research provides some insight into why youth might chose to participate or withdraw from a sport or physical activity. A review of the literature offers some valuable insights into participation motivation and attrition in young athletes. The review consists of a number of studies that attempt to determine the major motives youth cite for participating in and discontinuing participation.

Fry, McClements and Sefton (1982) examined the motivation of 8-16 year old ice hockey players. They asked the boys to rate a number of

motives for participating in hockey. The results revealed that 98% of the boys participated to have fun, 87% to become good players, 68% to make friends, 61% to win a trophy and 54% to get exercise.

In a similar vein, Gill, Gross and Huddleston (1983) examined boys and girls at a summer sport school. Their findings revealed that skill development was the most important reason for participation. However, caution must be taken, as the data was collected at a summer sport school and sport development was probably stressed to a greater extent than in a recreational setting. In addition to skill development, learning new skills and fun were commonly reported reasons for involvement. Similar results are reported by Robertson (1981, cited in Robertson, 1990), when Australian boys and girls (n=1287) were asked "what do you like most about sport?" Their responses revealed that intrinsic rewards (i.e., learning skills, doing things, having fun) were of utmost importance (70.6% for the boys and 66.3% for the girls).

Gould, Feltz, Horn and Weiss (1983), conducted a swimming attrition survey on 50 former male and female competitors, aged 10 - 18 years. Results revealed that 42% discontinued involvement because there were other things to do, 28% because they were not having fun, 24% wanted to play another sport, 24% were not as good as they wanted to be, 20% disliked their coach, 16% cited too much pressure, 16% said they were bored, and 16% stated that training was too difficult.

The above studies reveal that although there are different reasons for participating in youth sport, fun or enjoyment are among the most important. However, few of these studies have utilized or developed standard measures or multi-item scales to assess the extant of fun,

intrinsic motivation or enjoyment. The current research was designed to validate PACES, in an attempt to facilitate future research on enjoyment in the youth physical activity and sport environment.

2.2 Definition of Enjoyment

The previous research emphasized the importance of enjoyment as an important motive for participation, yet few researchers have attempted to operationalize the concept. A concise definition is offered by Scanlan and Lewthwaite (1984) when they concluded that 'sport' enjoyment was "...an individual's positive affective response to his/her competitive sport experience that reflects feelings and/or perceptions such as pleasure, liking and experienced fun" (p.32).

In a similar vein, the investigation by Wankel and Sefton (1989) resulted in a definition of fun in youth sports, "...it is a positive mood state largely determined by one's perceptions of personal achievement and the matching of one's skills against a realistic challenge" (p. 355). The underlying characteristics of both definitions is the expressed positive mood or affective state that an individual experiences. However, Wankel and Sefton's (1989) definition suggests that achievement and optimal challenge (matching of one's skills to task demands) are important to fun. This aspect implies that enjoyment is a broad construct and may vary both within and between individuals and across situations (Gorely, 1991, p.9).

The definition of sport enjoyment offered by Scanlan and Lewthwaite (1984) will be utilized in this thesis.

2.3 Intrinsic Motivation

Enjoyment and intrinsic motivation are central features of any leisure engagement (Iso-Ahola, 1980) and are often cited as important reasons for youngsters participating in sport (Wankel & Sefton, 1989). Enjoyment and intrinsic motivation often share a common base.

Deci (1975) suggests that the need to feel competent and self-determining underlies intrinsically motivated behaviours. Individuals are motivated to experience the internal rewards of feelings of competence and self-determination and activities likely to yield such internal rewards become intrinsically motivating. It is believed that sport and physical activity contexts are representative of such intrinsically motivating activities (Vallerand & Reid, 1984). Based on these assumptions, Deci (1975, Deci and Ryan, 1987) proposed a theory of cognitive evaluation. The theory focuses on the psychological processes underlying changes in intrinsic motivation. The theory suggests that intrinsic motivation varies in line with perceptions and feelings of perceived competence and self-determination.

Activities that help to satisfy a person's need for competence are greatly preferred to those which are not congruent with an individual's competencies (Iso-Ahola, 1980, p. 197). If an individual feels that he/she is in control, challenges are suited to his/her capabilities, he/she will have increased perceptions of competence and enhanced intrinsic motivation. Incompetence in an activity usually leads to reduced involvement in or complete withdrawal from a range of activities. In a similar vein, Deci and Porac (1978) emphasize that an individual who is unable to effect desired change in his/her environment

will display a decrease in intrinsic motivation, impaired learning and negative affect.

The other intrinsic component in addition to the need for competence, according to Deci and Ryan (1987), is self-determination. It is most prevalent when activities are freely chosen by an individual. For example, intrinsic motivation is enhanced when an individual is involved in the selection of desired outcomes and chooses ways of how to achieve them. This notion is consistent with existing research by Gould and Petlichkoff (1988) indicating that not playing and a sense of not belonging are related to dissatisfaction and eventual withdrawal in youth sport and physical activity.

Wankel and Kreisel (1985) in their study of factors related to enjoyment in youth sport interpreted their results as indicating that the most important factors were factors that were intrinsic to the activity. Their study found that factors considered intrinsic to the activity, such as, excitement of the sport, personal accomplishment, improving one's sport skills, testing one's skills against others and just doing the skills of the activity were most important to enjoyment.

Csikszentmihalyi (1975) constructed a list of eight independent reasons for enjoying sport activities based on interviews with college soccer and hockey players. The list was given to 40 male high school basketball players who ranked their reasons for enjoying basketball. The primary reason for enjoying basketball was for competition/measuring self against others, development of personal skills and friendship. Similarly, Brustad (1988) examined sources of season-long enjoyment in boys and girls aged 9 to 13 years, involved in a basketball league.

Findings revealed that perceived competence was not a significant predictor of season-long enjoyment. However, the motivational orientation to prefer high degrees of challenge rather than easy skills was associated with higher basketball enjoyment for both boys and girls.

Despite some of the inconsistencies in the research, distinct patterns are obvious. Items related to perceptions of competence (Chalip et al., 1984; Wankel and Kreisel, 1985; Wankel & Sefton, 1989) and challenge (Brustad, 1988; Csikszentimihalyi, 1975; Wankel & Sefton, 1989) repeatedly arise as sources of sport enjoyment in the current literature. As noted by Scanlan and Simons (1992), " knowledge of what makes the sport experience enjoyable to the participant is the key to understanding and enhancing motivation" (p.204). However, further research is required in this area before firm conclusions can be drawn concerning the interrelation of intrinsic motivation and enjoyment.

The validation of PACES will provide additional insight into the construct of sport enjoyment and its relationship to competence and challenge. It is hypothesized that items 5 (absorbed), 10 (good physically), 16 (sense of accomplishment), 20 (how well did you play) and 21 (how challenging) of the PACES scale will have a positive association to an individual's enjoyment score.

2.4 Achievement Motivation

Perceptions of competence or incompetence are important mediators of performance and persistence (Harter, 1978; Nicholls & Miller, 1984). By understanding what physical ability and competence means to youth we can gain more insight into their performance, level of intensity and

persistence (Duda, 1987).

Nicholls' (1978) theory considers the meaning of ability or how ability is construed in respect to performance and persistence in achievement settings (Duda, 1987). Important to this theory is the developmental aspect, that the concept of ability has different meanings to individuals at different stages of development. For example, according to Nicholls (1978), for a child approximately seven to nine years of age, performance outcomes on tasks of varying difficulty are based primarily on effort. In other words, children of this age believe that if they succeed on a task it was largely because they tried hard. Eleven and twelve year old, on the other hand, are able to completely differentiate between ability and effort. The older children understand that to be successful, ability, as well as effort is required. They realize that effort alone cannot equate to success.

The second area of Nicholls' (1978) theory is that these different conceptions of ability are linked to achievement goals. According to Nicholls and Miller (1984), there are two major achievement goals that involve different conceptions of competence: ego-involved and task-involved goals. The former involves a favourable comparison of one's athletic abilities to that of others. Task-involved goals, on the other hand, are more concerned with improving performance or performing a task better than anticipated. The types of goals employed depend on cognitive maturity, personal disposition and situational factors (Nicholls & Miller, 1984).

In summary, Nicholls (1978) offers a potential relationship between goal perspectives and persistence in achievement domains. An

adoption of a task orientation, wherein the exercise and the demonstration of competence is an end in itself, would tend to sustain more continuous participation. Whereas, ego-involved goals tend to result in reduced intrinsic interest. Individuals with ego-involved as opposed to task-involved goals tend to perceive themselves as incompetent and tend to lack persistence. This theory has been extended by Duda (1989) to indicate that personal ability is an important determinant of satisfaction and enjoyment in sport and physical activity. Roberts and Duda (1984) were the first to hypothesize how Nicholl's (1978) theory might provide some insight into the 'dropout' from children's sport programs. Research by Duda (1989) on junior high students has indicated that those who drop out of sports are more likely to emphasize ego-involved ability goals.

Harter's (1978) theory is very similar to that of Nicholls. Both authors propose that perceptions of competence or incompetence are the critical mediators of performance and persistence. Harter (1978) proposes that individuals possess an inner desire to demonstrate personal competence in specific areas of achievement. If an individual experiences affective feelings such as pride, enjoyment, and perceptions of success, he/she is more likely to continue to engage in mastery behaviours (sport). This inner desire for competence is directly related to adherence. Youth will continue to engage in tasks/behaviours that are rewarding (intrinsic), challenging and that offer them success.

Physical ability is an area of competence that is valued by most participants and when perceived to be high, it is related to positive feelings of self-worth (Harter, 1982). These positive feelings about

the self should be associated with greater enjoyment of the activity that fosters the positive affect. Consistent with both Harter's (1978, 1982) and Nicholls' (1978, 1984) theories are findings that reveal ability-related factors such as the learning, testing, and improvement of skills are important to youth sport participation and enjoyment (Robertson, 1990; Scanlan & Lewthwaite, 1984; Wankel & Kreisel, 1985).

In summary, the above theorists provide the foundations to facilitate an understanding of the relationships between perceptions of ability, achievement and enjoyment. The validation of PACES will enable further investigation of the above theories. These theories are important, but enjoyment must also be analyzed in a wider context. Enjoyment is a complex construct. The amount of enjoyment experienced by an individual is affected by many factors. Factors such as, parental and coach influence, competition outcome, peer support and other issues surrounding the physical activity or sport environment will have significant effect on the amount of enjoyment experienced by the youth.

2.5 Sources of Enjoyment

2.5.1 Flow and Challenge

Previous discussions from a number of different theoretical perspectives have demonstrated that testing one's skills or competencies against realistic task challenges is important to intrinsic interest in an activity (Deci & Ryan, 1987; Harter, 1982; Iso-Ahola, 1989; Nicholls, 1984). Csikszentmihalyi's (1975) concept of flow also acknowledges the factor of competence as a base for enjoyment and intrinsic motivation. He stresses that an individual is intrinsically motivated to engage in

an activity in which one's actions successfully meet a set of challenges. When skills and challenges are in balance, flow results. Flow described by Csikszentmihalyi (1975), is "the state in which action follows upon action according to an internal logic which seems to need no conscious intervention on our part. We feel in control of our actions, and there is little distinction between self and environment; between stimulus and response; or between past, present or future" (p.43).

The flow experience is inherent in sport and most physical activities engaged in by youth. Participants are well aware of the importance of realistic challenges. For example, when athletes have been presented with a situation that is too difficult and perceived unachievable, anxiety is the result. In a similar vein, a contest involving a weak opponent leads to boredom rather than enjoyment. Most physical activities and sports involve a testing of one's competence in a competitive activity governed by written rules and clear objectives that clearly dictate success or failure. It is well understood by an athlete when he/she scores more goals than the opposition or when he/she through a superior effort extends a more skilful opponent in a difficult match. In these situations, the athlete is so focused that he/she is oblivious to his/her surroundings (centring of attention) and he/she will have a sense of control over the proceedings (control of action and environment). Csikszentmihalyi (1975, p.60) summarises the qualities necessary for flow, "...activity is able to limit the stimulus field so that one can act in it with total concentration, responding to greater challenges with increasing skills, and when it provides clear and

unambiguous feedback, then the person will tend to enjoy the activity for its sake." The underlying nature and the inherent qualities of sport and physical activities provide the arena for youth to encounter flow, and to engage in self-rewarding and enjoyable experiences.

In a study of adolescents in three sport settings, Chalip, Csikszentimihalyi, Kleiber and Larson (1984), found that informal sport settings in contrast to organized sport appeared to provide a better balance between challenges and abilities, and therefore resulted in increased enjoyment (p. 114). In a similar vein, Wankel and Sefton's (1989) investigation of season-long fun, reflected a connection between perceived competence and intrinsic motivation. The above studies support Deci and Ryan's (1987) and Csikszentmihalyi's (1975) theories of intrinsic motivation, perceived competence and their interconnections with enjoyment.

The extensive research on perceptions of ability and competence and its positive association to enjoyment and intrinsic motivation has direct relevance to the proposed study. These findings reveal that perceived competence and ability are important to both intrinsic motivation and the level of enjoyment reported.

2.5.2 Competition and Outcome

Excitement, stimulation and enjoyment are often cited characteristics of competition which are inherent in most physical activities. "Competition is a goal directed, social process that some individuals thrive on, while for others it represents a major source of discomfort, stress and pressure" (McAuley & Tammen, 1989, p.84). An

overemphasis on competition is a commonly cited antecedent for withdrawal in youth sport (Gould & Petlichkoff, 1988).

Sport and recreation activities provide the opportunity for youth to test and evaluate their abilities against those of others. This is important as it is a primary means by which they assess their competence (Passer, 1988, p.68). Many would argue that competition is a necessary ingredient in youth sport and games as it generates excitement, is stimulating and youth often report enjoying it. Conversely, competition can be quite controlling and can lead people to view games as instruments for winning rather than as interesting or enjoyable in their own right (Ryan, Mims & Koestner, 1983).

Research indicates that competition alone may reduce intrinsic motivation (Deci, Betley, Kahle, Abrams & Porac, 1981; Vallerand, Gauvin & Halliwell, 1986). The research of Vallerand et al., (1986) was with boys 10-12 years old performing a stabilometer motor task. The boys were randomly assigned to one of two conditions: interpersonal competition or intrinsic mastery orientation. The boys involved in the competition condition spent significantly less time on the motor task than those boys involved in the mastery condition. In a similar vein, Deci et al., (1981) conducted a study on college students participating in a cognitive task. Their results reveal that the students participating in the task with the explicit goal of beating another student displayed lower levels of intrinsic motivation than the noncompeting students. Both of these studies provide evidence that competition can have deleterious consequences on intrinsic motivation.

A study by Weinberg and Jackson (1979) provided similar results. This study involved 40 male and 40 female undergraduate students performing a motor task (balancing on a stabiliometer). Results revealed that success is significantly associated with attributions to high ability, high effort, good luck and high levels of intrinsic motivation. Furthermore, the data analysis highlighted significant correlations between effort and task enjoyment, excitement and interest. These results are consistent with the view of Deci (1975), that an overemphasis on winning and success can adversely affect feelings of competence and self-esteem. The results also are consistent with Nicholl's (1978, 1984) theory, in that effort and ability attributes were most important to intrinsic motivation.

A different approach was undertaken by McAuley and Tammen (1989) in their study of 116 undergraduates participating in basketball shooting. These authors suggested that the subjective interpretation of competition should be assessed rather than the objective competitive outcome. Their underlying premise was that it is quite often possible to perceive success if one plays extremely well against a superior opponent even if one loses. The results revealed that positive competitive outcomes can facilitate intrinsic motivation, but that such an effect occurs at a higher level than simply winning or losing. An individual will experience increased perceptions of competence when an activity is optimally challenging and the individual perceives the outcome to be self-determined (effort).

The above studies on competition and outcome indicate that intrinsic motivation and enjoyment can be undermined if there is an

overemphasis on winning at all costs. It seems that the best methods for maintaining intrinsic motivation and enjoyment is by presenting interesting challenges and by focusing on improving one's game rather than on winning. The PACES scale reiterates these studies with items that focus on intrinsic aspects rather than on competition and outcome. Several items focus on feelings such as, invigorating, stimulating, refreshing, energizing and happy. The PACES scale is concerned only with those items that reflect an individual's own personal feelings and perceptions, not objective outcomes. These finding are re-emphasized by Wankel and Sefton (1989) in their study of season-long fun. They state that game outcome is important to fun, but it is not the most significant aspect. Rather it is the demonstration of personal ability (competence) and the perception that one has played well that is the most important.

2.5.3 Age and Gender Effects

A study conducted by Scanlan and Lewthwaite (1984) on 9-14 year old competitive wrestlers revealed that age was found to be negatively related to enjoyment. Weiss, Bredemeier, and Shewchuk (1985) reported a similar decrease in intrinsic motivation for boys and girls across grades 3 to 6 (ages 9-12 years) in a study conducted at a sport skill development camp.. As well, a study conducted by Wankel and Kreisel (1985) on boys age 7-14 years participating in soccer, baseball and hockey revealed some age related differences. The latter study revealed that as age increased there was also an increase in importance of excitement of the game. Furthermore, Wankel and Kreisel's (1985) study

found that as age increased there was a decrease in importance of the factors pleasing others and doing the skills of the game. The increase in the importance attached to the excitement of the game for enjoyment may be attributed to the aspect that as skills are mastered with age and experience the game becomes more exciting. In summary, the study reveals that as age increases enjoyment factors are still prevalent, they merely take on different dimensions. More specifically, the study reinforces the conditions necessary for a youth sport experience to be enjoyable. The experience should include providing youth with reasonable challenges and opportunities for personal accomplishment and satisfaction. Most of these conditions have been highlighted earlier in the review of literature surrounding achievement motivation, intrinsic motivation and flow.

Research by Gill, Gross and Huddleston (1983) revealed some interesting findings on gender differences in respect to youths' motives for sport participation. Their study indicated that young female swimmers placed higher emphasis on fun and friendship than did their male peers. The males, on the other hand, generally rated achievement/status items (to win, feel important, be popular, gain status) higher than did their female peers. In a similar vein, Duda's (1987) investigation of goal orientations in sport reinforced the Gill et al. (1983), findings, the males had a higher tendency for ego-involvement than did the females. These two studies identify some gender differences, most notably in the achievement/status items. However, more importantly for the purpose of this study, these studies reinforced the most frequently cited motive for participation, fun.

These studies relate to Nicholl's (1978, 1984) theory indicating that ego involvement can undermine intrinsic motivation. To investigate Nicholl's theory, Wankel and Sefton (1989), postulated that females would have overall greater fun levels than males. However, Wankel and Sefton's (1989) research on fun in youth sports revealed that there was no consistent association of gender and level of fun.

In summary the relationship between age, gender and enjoyment is a complex one. It is proposed that PACES will be able to measure the extant of physical activity enjoyment regardless of gender. However, due to the nature of the sample, the age-enjoyment relationship can not be examined.

2.5.4 Influences of Coaches and Parents

A theory that has been utilized to interpret the effects of significant others is Harter's theory of competence motivation (1978, 1982). Perceived competence is related to a youth's feelings of pride, enjoyment and perceptions of success. In addition to self-perceptions, socialization experiences can contribute to an individuals's self-assessment. The reinforcement and interaction patterns of parents, peers and coaches directly influence the youth's formation of attitudes about self-worth and personal competency. Harter's theory is developmental and acknowledges the high dependency of youth on significant others. Youth require adult approval not only as an incentive to perform behaviours but as a source of information and feedback about the adequacy of their performance (Harter, 1978, p.47).

Robertson's (1990) study on Australian youth provides some interesting results regarding parental versus youth perceptions of enjoyment in sport. He had coaches rank 10 enjoyment factors that they perceived to be of importance to young athletes. These rankings were then compared to the rankings done by the youth. The comparison revealed that the coaches felt that particular extrinsic and social enjoyment factors were more important to children. However, the children stated that the intrinsic rewards inherent in skill learning, doing the skills and having an exciting and close contest were the most important. This study emphasizes that intrinsic factors appear to be important for youth to enjoy sport, and that coaches, parents and others are not that attuned to what their children value.

Parental pressure is defined by Hellstedt (1990, p. 137) as, "...the amount of motivational influence the parent exerts on the child-athlete to compete in sports, perform at a certain level and continue participation." Parental pressure varies from positive support on one end of the continuum to excessive negative pressure. A child bombarded with criticism and negative feedback will experience undesirable anxiety and eventual withdrawal from the unrewarding environment. Gould and Petlichkoff's (1988) research focused on competitive anxiety in children and indicated that a major stressor was performance evaluation and fear of failure among children. Anxiety from evaluations evolves from many sources: peers, self, parents and coach. Expectations and values perceived by children may facilitate or impede their involvement and adherence to sport.

Brustad's (1988) study focused on the influence of interpersonal and socialization factors on affective outcomes. The study was conducted on 9 - 13 year old basketball players. The analyses revealed that for both boys and girls, greater enjoyment was related to high intrinsic motivation and low perceived parental pressure. In a similar vein, a study by Wankel and Sefton (1989) alluded to the influence of certain leadership practices that are more likely to result in positive fun experiences.

A field study on sport enjoyment was conducted by Scanlan and Lewthwaite (1984) involving seventy six male wrestlers aged 9 to 14 years. The study examined intrapersonal variables, including the participants' age and perceptions of their wrestling ability in relation to sport enjoyment. As well, the authors examined significant adult influences, including the boys' perceptions of typical parental and coach behaviours, in relation to enjoyment. Their results revealed that younger boys, and those who perceived greater wrestling ability, enjoyed their sport more than did older boys and those with perceptions of lower ability. Their findings revealed that boys who perceived greater paternal and coach satisfaction with their season's performance tended to experience greater enjoyment. As well, the wrestlers that experienced less pressure and fewer negative performance interactions with their mothers also reported less anxiety and greater enjoyment. These results are further reinforced by Ommundsen and Vaglum (1991) in a recent study conducted on 223, 12 and 16 year old male soccer players. The authors found that there was a relationship between negative behaviour of significant others reported by the players and lower soccer enjoyment.

In summary, the above studies indicate that there is a definite relationship between significant adult influences, perceived competence and enjoyment. It appears that greater enjoyment may be experienced by youth when perceived ability and perceived positive adult influence is high. However, if there is a lot of pressure and criticism from significant others (parents, coaches, or friends) this will undermine youth competence and foster anxiety.

2.5.5 Summary of Review of Literature

The link between enjoyment, intrinsic motivation and the dynamic factors influencing an individual's positive affect is a complex one. Early investigations, primarily assessed youth enjoyment with one or two item measures. This is problematic because single-item scales often have low reliability (Nunnally, 1978) and because there is no evidence of either reliability or validity of the multi-item measures (Wankel and Kreisel, 1985: Wankel and Sefton, 1989). Given the potential importance of enjoyment in sports, it can be assumed that a multi-item scale assessing individual enjoyment would be a valuable asset.

The above research has consistently shown that "enjoyment" or "fun" are reported to be a primary motivation for engaging in youth sports (Gill et al., 1983; Gould et al., 1983; Wankel and Sefton, 1989). Of equal importance is the role enjoyment plays in exercise adherence (Dishman, 1988). However, to adequately test these hypotheses, it is necessary to have a reliable and valid measure of enjoyment in physical activity or sport.

2.6 Development of PACES

Kendzierski and DeCarlo (1991) developed the Physical Activity Enjoyment Scale (PACES, refer to Appendix I), as a means of assessing the extent an individual enjoys doing any given physical activity or sport. Initially a set of 39 seven-point bipolar items were generated on the basis of (a) adherence and exercise enjoyment literature (i.e., items were created based on previously used items, based on reported descriptors of feelings experienced while engaging in physical activity (b) examination of dictionary and thesaurus entries and (c) discussions between Kendzierski and DeCarlo about affective experiences regarding physical activity, including informally reported research on undergraduate subjects and acquaintances. The resulting list of 39 items were then submitted to three experts in the field of exercise adherence. They rated the extent to which they thought each item should or should not be included in a measure of the extent to which an individual experiences a specific physical activity as enjoyable at a given point in time. Each item was rated on a scale ranging from 1 (definitely not included) to 7 (definitely should be included). Of the 39 items, each of which received a mean rating of at least 5.00, 16 were selected for further study (mean ratings ranged from 5.00 with a standard deviation of .82 to 7.00 with a standard deviation of 0). One expert suggested three additional items, following a telephone conversation with the other two experts. It was unanimously decided to bring the total scale items to 19.

The internal consistency of PACES was assessed in two studies. The first study involved 30 students at a campus fitness centre. These

students were approached prior to their workout and asked to participate in the study. The consenting participants filled out PACES immediately following their bicycle workout. Item-total correlations were computed and a criterion of .30 was set for item retention. One item was dropped from the scale. The item-total correlation for the remaining 18 items ranged from $\underline{r}$=.35 to $\underline{r}$=.89, with a Cronbach's (1951) coefficient alpha of .93. PACES scores ranged from 42-119, with a mean score of 89.17 and a standard deviation of 17.25.

Kendzierski and DeCarlo's (1991) second study involved 33 students, who were exercising on an abdominal machine at the campus fitness centre. Potential subjects were approached and upon agreement filled out PACES immediately following their workout. Item-total correlations ranged from $\underline{r}$=.45 to $\underline{r}$=.87, with a Cronbach's (1951) coefficient alpha of .93. PACES scores ranged from 62-126, with a mean of 95.06 and a standard deviation of 16.79.

The results of the above studies provided evidence that PACES had good internal consistency, but further validation research was warranted. The two researchers designed two additional studies. In study one, 44 undergraduate subjects rode an exercise bicycle under control and external focus conditions. The control condition consisted of subjects riding a bicycle for 20 minutes in a laboratory devoid of decoration. In the external condition, subjects listened to a cassette tape of their choice of music. An internal consistency of .96 on Cronbach's (1951) coefficient alpha was obtained for both control and external focus conditions. PACES scores in the control condition ranged from 28-119, with a mean of 81.05 and a standard deviation of 21.08.

PACES scores in the external focus condition ranged from 56-126, with a mean of 96.27 and a standard deviation of 17.98.

The second study involved 37 undergraduate students who had to ride a stationary bike and jog on a minitramp. Each subject rode an exercise bike and jogged on a minitramp in the first two sessions and in the third session he/she could choose the preferred activity. The researchers postulated that the third PACES score would be the highest as the subjects were performing the activity of choice. A Fisher's exact test ($p=.05$) revealed that there was a significant relationship between a subjects predicted and actual choice of activity. PACES scores in the initial bicycling session ranged from 48-126, with a mean of 84.62 and a standard deviation of 18.71. PACES scores in the jogging session ranged from 35-126, with a mean of 87.95 and a standard deviation of 19.74. The correlation between initial and third session PACES scores was .60 for bicycling and .93 for jogging. Of the 34 subjects that completed the third session, 23 chose the activity predicted on the basis of their original PACES scores. This study provides limited evidence for the validity of PACES.

PACES appears to hold promise as a reliable and valid measure of enjoyment in physical activity. However, as outlined by Crocker (1991) there are several potential shortcomings. He conducted a study to continue the validation process and to examine the factor structure of PACES with a youth population. In addition he attempt to develop a shortened version of PACES. The subjects were 392 summer youth camp participants, ranging in age from 10 to 17 years. The PACES for this sample had a mean of 100.6 and a standard deviation of 16.14. Item-

total correlations ranged from $\underline{r}$=.43 to $\underline{r}$=.74. The internal consistency as measured by Cronbach's (1951) coefficient alpha was .91. The factor structure of the 18 items was examined by principle axis factor analysis. One factor had an eigen value exceeding 1 (6.75), accounting for 37.5 percent of the variance. The analysis demonstrated that three items had low communalities (<.25). By deleting these items, PACES had item-total correlations ranging from $\underline{r}$=.63 to $\underline{r}$=.75 and an internal consistency of .87.

In summary, the above authors have provided evidence for PACES validity and reliability in measuring enjoyment in primarily fitness-oriented aerobic activities. Future research is necessary to assess the reliability and validity of the PACES with other types of physical activity settings. In addition, most of the above research was conducted with undergraduate subjects. There is a need to determine if PACES is reliable and valid with other populations. Furthermore, the small sample size of the previous studies eliminated the opportunity to examine gender differences and the factor structure of the inventory. Lastly, future research should focus on administration of PACES in an actual physical activity or recreation setting. The above considerations formed the guidelines for the present research.

To further substantiate the concurrent validity of PACES, five single indicators of enjoyment were created and included on the original questionnaire (see Appendix II). It was assumed that if PACES assessed the extent of enjoyment, it should be positively correlated to item 19 (How much did you enjoy the activity just completed...). Item 20 (How well did you play...) and item 21 (How challenging was the activity...)

which were strong predictors of fun in Wankel and Sefton's (1989) study on a season long investigation of fun. It was reported that perceived competence and challenge are strongly correlated to level of fun and enjoyment (Csikszentmihalyi, 1975; Deci & Ryan, 1987; Harter, 1978;). Item 22 (Will you participate next year...) evolved from the work of Graef et al. (1983) and Fine (1989). Their research supports the notion that people are likely to repeat a behavior when they enjoy what they are doing. The fifth concurrent item, item 23 (Will you tell your friends...) evolved from the research of Csikszentmihalyi and Larson (1984) on adolescents. Their findings indicate that young people enjoy being together and sharing enjoyable experiences with their friends.

Chapter 3

Research Methodology

3.0 Investigating Reliability and Validity

The process of investigating an instrument's reliability and validity is quite extensively outlined by Green and Lewis (1986). Reliability reflects the consistency and dependability of a measurement (Green & Lewis, 1986, p.83). There are three major ways of testing reliability. Internal consistency is an indication of the extent to which each item in the instrument relates to the other items. Stability or test-retest, is the degree of association between sets of measurements collected at two or more points in time. Inter-rater reliability estimates the amount of error in an instrument's score that is caused by the observation, rating or coding processes. It refers to the individual doing the coding, documenting or observing, not the respondent or the measure. For the purpose of this study, the first two reliability tests will be conducted on PACES.

The validity of PACES is also undergoing scrutiny. Validity is defined by Green and Lewis (1986, p.101) as, "...the extent to which the instrument adequately measures the concepts being studied." There are three types of validity. Content validity, examines the extent to which a instrument contains an adequate sample of the total possible meanings of a concept or a representative collection of items (e.g. as demonstrated in the review of literature). This aspect of validity was investigated by Kendzierski and DeCarlo (1991) in the development of PACES. Criterion validity, is the degree of correlation of the

instrument with another instrument of the same phenomenon. Specifically for this study, concurrent validity will be tested by relating the PACES scores to the five single items thought to reflect enjoyment. Construct validity, is the extent to which scores on PACES permits inferences about underlying traits, attitudes and behaviours and confirms assumptions about relationships among the variables. The proposed study will examine the last two types of validity to determine whether the PACES has utility within the youth environment and if it adequately measures enjoyment.

3.1 Pilot Study

For the purpose of the proposed research the PACES scale had to be piloted to ensure appropriate comprehension level. Before attempting to assess the validity and reliability of PACES in the youth setting the original scale was initially administered to a group of 13 to 16 year old tennis players. The pilot test was imperative to ensure that the items were clearly understood and that the bi-polar scale was appropriate for this age group.

The pilot testing was conducted with the selected age groups at two tennis centres. The researcher introduced herself and the nature of the study. An informed consent form was completed by all participants, parents or guardians before the pilot questionnaire was distributed.

The pilot sample was comprised of 8 Royal Glenora and 7 University of Alberta players. The researcher administered the questionnaire to the selected players with specific instructions. They were told if they had any questions or difficulties they were to mark the questionnaire and

ask the researcher for clarification. All respondents completed the original questionnaire with no apparent difficulties.

In analysing the completed pilot-questionnaires, particular attention was focused on how the players responded to the seven point Likert scale and potential vocabulary difficulties. The players, regardless of age seemed to use all seven points in responding to the various questions. Following the results of the pilot study, it was decided to use the original PACES, five individual background questions and five additional questions without any modification. The design of PACES, as close-ended, bi-polar questions permits relative ease of coding and analysis. This design also provides a uniform set of answers for respondents (Weisberg & Bowen, 1977).

3.2 The Sample

The population for the study consisted of participants in the Edmonton Minor Soccer Association's indoor youth soccer program in the under 14 and under 16 age groups. This population group was selected for a number of reasons. First, the researcher has worked extensively with the soccer association, as a coach and as a participant and thus had familiarity with the organization. Secondly, the association is Edmonton-based which makes communication and data collection economical and efficient. Third, the Edmonton Minor Soccer Association is one of the largest sport organizations in Edmonton. There are approximately 14,304 youths registered in the association. This large sample provides access to both males (69%) and females (31%) as possible participants.

A sample size of approximately 90 participants for each of the gender groups will be sufficient to reveal reliable correlations and facilitate item and scale-analyses. To meet this requirement, all of the under 14 and under 16 age groups were contacted to obtain their involvement in the research (23 registered teams).

3.3 Data Collection

Soccer is a physical activity that is team oriented and aerobic in nature, thus providing a different context than previous studies. The questionnaire was administered at the team practices. This aspect would ensure the utility of the scale for assessing enjoyment within a natural physical activity context. The practice environment also offers a more controllable setting from time 1 to time 2. Previous studies with the scale were restricted to specific forms of aerobic exercise, biking, jogging and tai chi.

A list of under 14 and under 16 coaches was obtained from EMSA. These coaches were contacted and the nature of the study was explained. The coaches were very cooperative and only two coaches out of twenty-three were unwilling to be involved. The sample was almost evenly represented by both male and female groups, 11 girls teams and 10 boys teams. The sample was also representative of the four city zones. The sampling procedure involved a number of stages.

Stage one involved initial contact with coaches and players. The purpose of the study was explained to the coaches of the teams. This was done during the second week of January at which time each team had played half of their scheduled games. It was emphasized that the PACES,

not the coaches, was being evaluated. Upon approval from the coaches, the researcher attended the next game or practice to explain the study to the participants and parents. They were briefed on the general nature of the study and told that the study involved developing a scale for assessing reactions to physical activity. No specific reference was made to enjoyment. The players were encouraged to participate and if they agreed they, along with their parents, were asked to complete an informed consent form (See Appendix III). If a player's parent was not available, a letter and consent form was sent home for approval prior to commencing participation in the study. The participants in both sample groups were assured that they would remain anonymous and their responses kept confidential.

Stage two involved distribution and completion of consent forms, as well as administration of the questionnaire. The coaches were contacted after their next practice to enquire about the number of returned consent forms and to find out when their next practice was scheduled. The researcher then attended the practice, obtained completed consent forms and administered the questionnaire immediately following the practice session. When applicable, arrangements were then confirmed for the retest.

Stage three was the retest. The teams selected for the test-retest were those teams that met the following criteria: practice held one week apart and under similar practice conditions. These conditions would ensure that participants had similar responses from time 1 to time 2. Due to the proximity of the research to playoffs, only six of the

twenty-one teams met the above criteria. A total of 42 players completed the retest.

3.4 Data Analyses

The current study examined the internal consistency and test-retest reliability of the PACES scale. Internal consistency was determined by calculating an estimate based on the average correlation among the 18 items (Cronbach's, 1951, alpha). Pearson-Product moment correlations were calculated between PACES scores and scores on the other five indicators of enjoyment thought to reflect enjoyment. As well, Pearson-product moment correlation was calculated for test-retest reliability of the scale over a one week interval.

An exploratory factor analysis was conducted to investigate whether the individual PACES items constituted a uni-factor scale.

Chapter 4

Results

4.0 Descriptive Statistics

The population sample utilized for PACES validation and reliability research was composed of male and female youth indoor soccer players. The specific sample consisted of 98 male and 125 female youth soccer players, for a total sample of 223 players. The male players were representatives of 8 Edmonton Minor Soccer clubs, and the female sample was drawn from 10 Edmonton Minor Soccer clubs. The other three teams (one female and two male) initially involved in the study decided to voluntarily withdrawal following the first meeting with the researcher. Initial descriptive statistics revealed a mean age of 15.04 years for the total sample, 15.06 for the males and 15.03 for the females (Table 1). The males had been involved in soccer for a mean of 6.85 years and the females for a mean of 5.91 years (Table 1).

Table 1

Descriptive Statistics for Age and Years of Sport Involvement

		Age		Involvement	
	n	M	SD	M	SD
Total Sample	223	15.04	1.05	6.32	2.47
Males	98	15.06	1.14	6.85	2.31
Females	125	15.03	.98	5.91	2.52

Initial descriptive analyses were performed on the PACES scores to determine their distribution. The mean score for the overall sample was 109.71 (SD=14.26). Separate statistics on the group of females revealed a slightly higher score of 113.11 (SD=10.82), while the data for the males divulged a lower mean score of 105.38 (SD=16.79) (refer to Table 2).

Table 2

PACES Means and Standard Deviations for Different Samples

	n	Means	Standard Deviation
Total Sample	223	109.71	14.26
Females	125	113.11	10.82
Males	98	105.38	16.79
Retest Sample (Test 1)	42	108.59	11.18
Retest Sample	42	111.02	13.08
Female Retest (Test 1)	20	110.95	10.98
Females Retest	20	111.30	13.26
Males Retest (Test 1)	22	106.45	11.19
Males Retest	22	110.77	13.23

A one-week retest performed by 42 subjects resulted in a mean score of 111.02 (SD=13.08) (Table 2). The retest sample was composed of 20 females and 22 males. The female retest sample had a mean score of

111.30 (SD=13.26). The male retest sample score had a mean score of 110.77 (SD=13.23). In further analysis of the retest scores, the retest sample's score on the first test was compared to the second test scores. The females had an initial mean score of 110.95 (SD=10.98) which was slightly lower than the retest mean score (M=111.30, SD=13,26). Similarly, the males initial mean score of 106.45 (SD=11.19), was also lower than the retest mean score (M=110.77 and SD=13.23). A similar pattern emerged when the first test score (M=108.59, SD=11.18) was compared to the retest score (M=111.02, SD=13.08). These results indicate that the youth appeared to experience greater enjoyment as the season progressed.

The slight differences between the initial and second test may be related to the nature of the practice from time 1 to time 2 or to individual subject differences (e.g. athlete's pre-game or post-game stress).

A comparison of composition of the retest sample with the total sample reveals that the two samples had similar characteristics. The age of the total sample had a mean of 15.04 years (SD=1.05). The retest sample had a mean of 14.81 years (SD=.77). The retest sample was slightly younger than the total sample. The other characteristic examined was the number of years involved in soccer. The total sample had a mean of 6.32 years (SD=2.46), while the retest sample was almost identical with a mean of 6.31 years (SD=2.49). The female and male initial retest sample had similar characteristics, age of females (M=15.05) with years involved (M=6.65), and the age of males (M=14.6) with years involved (M=6.0). These results indicate that the retest

although considerably smaller in sample size was representative of the sample population.

By examining PACES item-total correlations the researcher was able to understand the relationships between individual items and the entire scale. The corrected item-total correlation is the Pearson product moment correlation between the score on the individual item and the sum of the scores on the remaining items (refer to Table 3). A number of distinct patterns appeared when examining item-total correlations for the four samples. The sample patterns were identified according to the correlation coefficient (i.e., less than .40 and greater than .70). The correlations overall appeared rather high, ranging from .33 to .82. Items 5 (absorbed), 12 (frustrating) and 15 (stimulating) had consistently low correlations (<.40) for the total, female and male samples (see Table 3). Whereas, items 3 (like), 4 (pleasurable), 8 (happy), 10 (good physically) and 17 (refreshing) formed a pattern of correlations greater than .70 for the total, female and male samples.

Table 3

PACES Item-Total Correlations for Different Samples

Item	Total (n=223) r	Retest (n=42) r	Females (n=125) r	Males (n=98) r
1 - Enjoy	.70	.50	.51	.78**
2 - Interested	.60	.51	.43	.78**
3 - Like it	.76**	.52	.59	.82**
4 - Pleasurable	.71**	.79**	.71**	.69
5 - Absorbed	.47	.82**	.59	.37*
6 - Fun	.65	.73**	.54	.67
7 - Energizing	.48	.43	.43	.47
8 - Happy	.72**	.57	.61	.75**
9 - Pleasant	.61	.78**	.63	.57
10 - Good Physically	.71**	.73**	.51	.78**
11 - Invigorating	.51	.58	.48	.47
12 - Not Frustrating	.35*	.45	.33*	.39*
13 - Gratifying	.57	.78**	.48	.59
14 - Exhilarating	.53	.73**	.62	.47
15 - Stimulating	.39*	.66	.41	.35*
16 - Accomplishment	.62	.77**	.65	.60
17 - Refreshing	.71**	.54	.64	.72**
18 - Nothing Else	.53	.53	.48	.53

The method utilized in this study to assess scale reliability was Cronbach's (1951) alpha. It is based on the internal consistency of a scale. Cronbach's (1951) alpha measures the average correlation of items within a scale. Internal consistency of the PACES was calculated on the total sample (n=223), the retest (n=42), the female group (n=125) and the male group (n=98), to determine the reliability of the scale. The Cronbach's (1951) coefficient alpha calculated for the total sample was .91, while it was .92 for the retest data. The females had the lowest coefficient of .88, while the males had .91 (Table 4). The high coefficient for all the samples is an indicator of reliability. However, in the total sample, retest sample and female sample, item 12

(I am frustrated by it...) was identified as not being strongly related to the other items. Whereas, in the male sample, item 15 (It's stimulating...) was not as strongly related to the other items. The high correlation coefficients and Cronbach's (1951) alpha are strong indicators that the PACES items are measuring the same phenomenon.

Table 4

Internal Consistency of PACES Scale for Different Samples

	n	α
Total Sample	223	.91
Retest Sample	42	.92
Female Sample	125	.88
Male Sample	98	.91

Another procedure utilized to determine the reliability of PACES is the split-half reliability method. It is calculated by splitting PACES into two equal parts and examining the correlation between the two equal parts (the first 9 items are part one, while the second 9 items are part two). The resulting statistics for the total sample revealed a high correlation between the two halves (.78). The above correlations corroborate the Cronbach's (1951) alpha results indicating that PACES has high internal consistency.

4.1 Reliability of PACES

The results showed a significant Pearson's product moment correlation between initial and retest scores of PACES (r=.76, p<.001). As stated by Pagano (1990), "a correlation coefficient of .50 - .60 is considered fairly high" (p.130). It is important to consider the affective, behavioral nature of enjoyment and high correlations between time 1 and time 2 are possibly rare. Hence, given this likely variability in the phenomenon across time, a reliability of .76 for the instrument seems very high.

The test-retest data produced a Cronbach's (1951) coefficient alpha for part one (Q1 to Q18) of .82 and for part two (retest q1 to q18) of .92. The retest split-half statistics are strong indicators that PACES items are highly correlated and that the PACES scale provides a consistent measure.

To ensure that the retest sample was representative of the total sample a comparative analysis was conducted. The results revealed that the mean score of the total sample population was 109.7 (n=223), which is slightly lower than that of the retest sample (M=111.0, n=42). Further analyses of the item-means provides some indication of the similarities and consistency in the players responses. A comparison of means on items 1 to item 23 in the total sample, initial retest sample, and retest sample is presented in Table 5. Seven items (7 - energizing, 12 - not frustrated, 15 -stimulating, 18 - nothing rather be doing, 20 - competence, 21 - challenge and 23 - tell friends) with a mean below 6.00 were common to the total test sample, initial retest sample and retest sample. Three items (1 - enjoy, 3 - like and 6 - fun) with a mean above

6.50 were common to the total test sample, initial retest sample and retest sample. The average difference between the item means for the total sample and the retest sample was .16, with a range of .00 - .48. The largest difference between the item means for the total sample and the initial retest sample means was revealed by item 23 - tell friends (.48) and item 21 - challenge (.45). Overall, the retest sample and the total sample were consistent in their responses and the retest was a good representative of the total sample.

Table 5

PACES Item-means for Total and Retest Samples

Item	Total Test Sample (n=223)	Initial Retest Sample (n=42)	Retest Sample (n=42)
1 - Enjoy	6.58	6.71	6.64
2 - Interested	6.22	5.95	6.45
3 - Like	6.59	6.57	6.54
4 - Pleasurable	6.45	6.42	6.45
5 - Absorbed	5.87	5.81	6.07
6 - Fun	6.51	6.64	6.52
7 - Energizing	5.62	5.57	5.62
8 - Happy	6.28	6.33	6.43
9 - Pleasant	6.09	5.98	6.26
10 - Good Physically	6.41	6.43	6.40
11 - Invigorating	6.02	5.71	5.76
12 - Not frustrated	5.52	5.50	5.74
13 - Gratifying	5.85	5.62	6.14
14 - Exhilarating	6.06	5.98	6.12
15 - Stimulating	5.90	5.76	5.83
16 - Accomplishment	6.04	6.14	6.26
17 - Refreshing	5.94	5.71	6.00
18 - Nothing Else	5.77	5.71	5.76
19 - Enjoy	5.89	5.86	6.00
20 - Competence	5.48	5.71	5.45
21 - Challenge	4.74	4.26	5.19
22 - Participate Again	6.57	6.62	6.43
23 - Tell friends	5.98	5.74	5.50

However, slight differences emerged when the item-total statistics for the total sample where compared to the retest sample (refer to Table 3). By examining the item-total correlations (less than .40 and greater than .70) the relationship between the scale and individual items can be determined. In the total sample, items 1 - enjoy, 3 - like, 4 - pleasurable, 10 - good physically and 17 - refreshing had correlations greater than .70. While, items 12 - not frustrated and 15 - stimulating had low (less than .40) correlations. The retest sample item correlations differed slightly. Items 4 - pleasurable, 5 - absorbed, 6 - fun, 9 - pleasant, 10 - good physically, 13 - gratifying, 14 - exhilarating and 16 accomplishment had correlations greater than .70. The retest sample had no correlations below .40.

The differences in the above statistics between the total sample and the retest can be explained in a variety of ways. One explanation according to Tabnachnick and Fidell (1983, p.67), is the possibility of a deflated correlation in the retest sample maybe due to the restricted range in the retest sample. A second explanation may be that the items appeared mundane after initially completing the scale only a week earlier. Another rationale for the differences could be that the soccer practice was conducted in a different manner from time 1 to time 2 (competitive, tactical, skill oriented) and players respond differently to structured, organized practices versus unstructured, spontaneous practices.

4.2 Concurrent Validity of PACES

Positive correlation between an individual's enjoyment score as measured by PACES and that of the five other items provides evidence for concurrent validity. Items that had significant positive correlations with the total PACES score were items 22 (will you participate next year), 19 (Enjoy activity just completed...), 23 (Will you tell your friends...) and 20 (How well did you play...) (refer to Table 6). The lowest correlation was item 21 (challenge of activity...) at r=.18 (p<.01). These correlations are strong indicators of concurrent validity.

Table 6

Concurrent Validity of PACES for Different Samples

PACES Item	Total Sample (n=223)	Female Sample (n=125)	Male Sample (n=98)
19 - Enjoy	.36**	.36**	.30*
20 - Competence	.22**	.27*	.28*
21 - Challenge	.18*	.26*	.06
22 - Participate Again	.44**	.25*	.47**
23 - Tell Friends	.25**	.22*	.17

Note. * significant at p<.01 and ** significant at p<.001.

Further analysis of the concurrent indicators for the female and male samples revealed some slight differences. The females (n=125) indicated that item 19 (enjoy activity...) was positively correlated with PACES. While the male sample revealed that item 22 (will you participate next year...) was positively correlated with PACES. Both samples indicated that item 23 (tell friends...) was also correlated with PACES. In the male sample, item 21 (challenge of activity...) had a weaker correlation with PACES.

4.3 Factor Structure of PACES

Before examining the PACES scores by principal component analysis, the variables must be examined to ensure that they are suitably related to each other for the factor model to be appropriate. One of the goals of factor analysis is to identify factors that are substantively meaningful; the factors should summarize sets of closely related variables. Bartlett's test of sphericity was performed to ensure that the correlation matrix was not an identity matrix, so that factor analysis could be performed. The value of the test statistic for sphericity is based on a chi-squared transformation of the determinant of the correlation matrix. PACES correlation matrix had a sphericity of 1931.73 and an associated significance of less than .001, so it is evident that the population correlation matrix was not an identity matrix.

The Kaiser-Meyer-Olkin (KMO) measure was calculated on the PACES scores to ensure sampling adequacy. It is an index utilized to compare the magnitudes of the observed correlation coefficients to the

magnitudes of the partial correlation coefficients. Small values for the KMO measure indicate that a factor analysis of the variables may not be valuable, since correlations between pairs of variables cannot be explained by the other variables. The value for PACES was .922, which according to Kaiser (1974), measures as 'marvellous' for factor analysis (Norusio, 1988, p. B-45).

The squared multiple correlation coefficient between a variable and all other variables is known as communality. Communality refers to the proportion of variance accounted for by the common factors. It is another indication of the strength of the linear association among variables (refer to Table 7). Those items with an R^2 less than .45 could potentially be eliminated from the set of variables being analyzed. PACES had a few variables that fit this criteria: in the total sample, items 5 (absorbed, .33), 11 (invigorating, .41) and 15 (stimulating, .31); in the female sample, items 13 (gratifying,.45) and in the male sample, item 15 (stimulating, .37). These are the lowest PACE correlation coefficients, all of which are still relatively strong indicators of association. Further analyses of PACES's communality values revealed a number of strong associations among variables ($R >$ .70) (refer to Table 7). The total and male samples had a greater number of similar patterns, items 1 (enjoy, R^2=.73 and .87), 3 (like, R^2 =.76 and .89), 15 (stimulating, R^2=.31 and .37). Overall, the male sample depicted strong association among it's variables with items 1, 2 and 3 having correlation coefficients greater than .80.

Table 7

PACES Communality Values for Different Samples

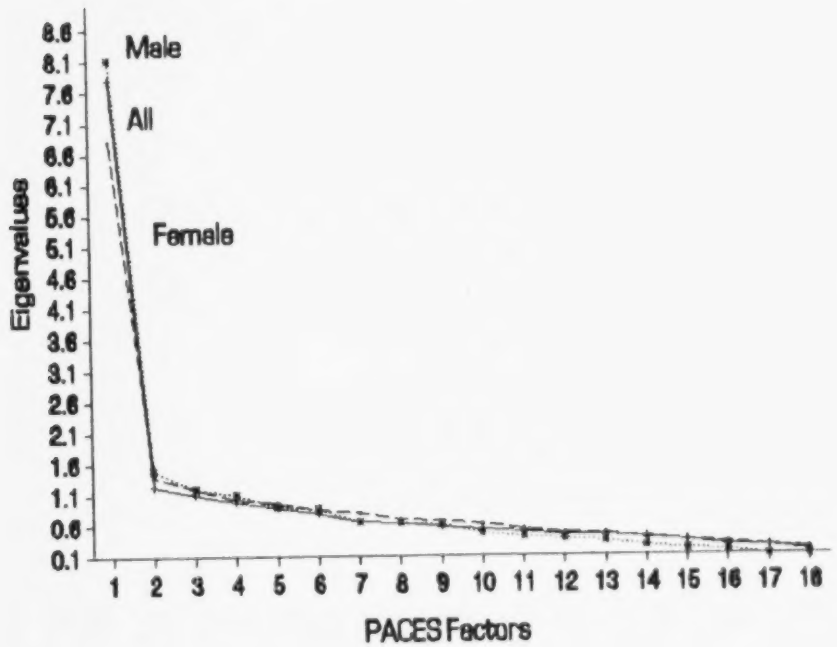
Item	Total Sample	Female Sample	Male Sample
1 - Enjoy	.73 **	.48	.87 **
2 - Interested	.56	.47	.83 **
3 - Like	.76 **	.68	.89 **
4 - Pleasurable	.66	.69	.74 **
5 - Absorbed	.33 *	.47	.60
6 - Fun	.66	.48	.73 **
7 - Energizing	.46	.62	.70
8 - Happy	.64	.51	.70
9 - Pleasant	.52	.59	.58
10 - Good Physically	.62	.61	.73 **
11 - Invigorating	.41	.71 **	.46
12 - Not Frustrating	.64	.68	.73 **
13 - Gratifying	.51	.45	.58
14 - Exhilarating	.68	.65	.64
15 - Stimulating	.31 *	.50	.37 *
16 - Accomplishment	.53	.66	.46
17 - Refreshing	.64	.59	.71 **
18 - Nothing Else	.49	.59	.55

The factor structure of the 18 item PACES was examined by principle component analysis. In principal component analysis, linear combinations of the observed variables are formed (Norusio, 1988, p.B-46). Norusio (1988) suggests that there are several procedures for determining the number of factors to use in a model (p. B-46). One criterion is to examine the eigenvalue of the factors and to include only those with a value greater than one. A second criterion is to plot the total variance associated with each factor. The plot will reveal a distinct break between the steep slope of the large factors and the gradual trailing off of the rest of the factors.

The initial principal component factor analysis on PACES extracted three factors, but only one factor had an eigenvalue exceeding 2 (7.80), accounting for 43.3 percent of the variance. The second factor had an eigenvalue of 1.25, accounting for 7.0 percent of the variance and the third factor had an eigenvalue of 1.09, accounting for 6.1 percent of the variance. A plot of the total variance was performed to illustrate the distinct break between the large factors and the rest of the factors (Figure 1). Similar findings were revealed when principal component analysis was utilized to extract factors from the separate female and male subsamples. The principal component analysis for the female subsample revealed four factors, but only one factor had an eigenvalue exceeding 2 (6.76), accounting for 37.6 percent of the variance (Figure 1). The three other factors accounted for 7.8, 6.9 and 5.6 percent of the variance. Similarly, the analysis for the male subsample identified four factors, but only one factor had an eigenvalue exceeding 2 (8.13), accounting for 45.2 percent of the variance (Figure 1). The three other factors accounted for 8.1, 6.9 and 5.9 percent of the variance. These results suggest that a model with one factor may be adequate to represent PACES. This is reiterated by the scree plot, as stated in Norusio (1988) "...experimental evidence indicates that the scree begins at the kth factor, where k is the true number of factors (p. B-47). From the plot it appears that a one factor model is accurate for PACES.

Figure 1

PACES Plot of eigenvalues for different samples



A VARIMAX rotation was applied to the factor analysis to transform the initial matrix into one that was easy to interpret with the objective of the factor rotation being to achieve a simple structure. By examining Table 8 it is evident that some items have high loadings (i.e., item 1 - factor 1 has .80, .57 and .86), while others have lower loadings (i.e., item 11 - factor 1 has .06, -.01 and .16). The diverse loadings permits the factors to be differentiated from each other. If several factors have high loadings on the same variables it is difficult to assess how the factors differ (Norusio, 1988, p.B-54).

Table 8

PACES Rotated Factor Matrices for Different Samples

	Factor 1			Factor 2			Factor 3			Factor 4	
Item	T	F	M	T	F	M	T	F	M	F	M
1 - Enjoy	.80	.57	.86	.26	.23	.24	.16	.31	.20	-.10	.16
2 - Interested	.70	.60	.81	.28	-.05	.30	.07	.31	.28	-.03	.08
3 - Like	.60	.78	.82	.35	.22	.33	.24	.05	.34	.15	.04
4 - Pleasurable	.52	.69	.61	.54	.18	.60	.09	.32	.07	.28	-.02
5 - Absorbed	.77	.35	.41	.20	.30	.08	.12	.46	-.23	.20	.61
6 - Fun	.25	.45	.77	.19	.12	.17	.15	.50	.03	.10	.32
7 - Energizing	.58	.20	.12	.17	.21	.15	.61	.03	.28	.74	.76
8 - Happy	.32	.48	.55	.30	.22	.26	.47	.30	.54	.38	.21
9 - Pleasant	.50	.54	.29	.61	.12	.66	.20	.43	.22	.32	-.03
10 - Good phys.	.21	.11	.51	.35	.74	.29	.50	.18	.48	.14	.39
11 - Invig.	.06	-.01	.16	.56	.80	.55	.24	.24	.05	.11	.37
12 - Not frustr.	.19	-.02	.16	.03	.06	.01	.80	.21	.84	.79	-.01
13 - Gratifying	.35	.40	.25	.50	.46	.40	.48	.10	.60	.26	.06
14 - Exhilar.	.09	.37	.11	.81	.70	.79	.10	.18	.09	.02	.02
15 - Stimulating	.19	.13	.05	.53	.10	.58	.00	.68	.06	.08	.17
16 - Accomplish	.35	.66	.38	.61	.47	.50	.18	.06	.23	.04	.14
17 - Refreshing	.35	.50	.27	.53	.55	.42	.49	.09	.54	.18	.42
18 - Nothing	.66	.14	.64	.07	.18	-.03	.24	.73	.21	.09	.31

Different rotations may actually result in the identification of different factors. Rotation redistributes the explained variance for individual factors. However, rotation will not change the communalities and percent of variance accounted for (Norusio, 1988, B-54). The default rotation utilized by SPSSpc is VARIMAX. It attempts to minimize the number of factors that variables load on. Separate factor analyses were performed on the total, male and female subsample PACES scores which resulted in 1 dominant factor for all three samples (Table 8). By examining this table it is easy to interpret groups of variables.

Note, items 1 (enjoy), 2 (interested), 3 (like) and 4 (pleasurable) have high loadings (>.50) on the first factor common to all three samples (total, female and male). Whereas, items 11 (invigorating), 12 (not frustrated) and 15 (stimulating) have very low loadings (<.20) on the first factor common to all three samples.

To ensure that the results from the VARIMAX rotation approximated the "best" factor solution an oblique rotation was performed on the PACES scores. The orthogonal or VARIMAX rotation resulted in factors that were uncorrelated.

Oblique rotation permits common factors to be correlated together. A condition that may be more similar to reality as it is unlikely that influences in nature are uncorrelated in the population (Norusio, 1988, p. B-59). The oblique rotation structure matrix (Table 9) that resulted was similar to the VARIMAX matrix (Table 8). In comparing the two matrices, items 1 through 4 have the highest correlations (>.60) in both matrices. Similarly, items 11, 12, 14 and 15 have the lowest correlations (<.40). However, differences between the two matrices did exist, items 6 and 8 loaded higher on factor one in the oblique rotation (>.60) than in the orthogonal solution (>.50). In both cases, however, the first factor accounted for most of the common variance (43.3%). Similarly, factor 2 and factor 3 did not add much to the interpretation of the items (7.0% and 6.1%).

Table 9

PACES Oblique Structure Matrices for Different Samples

	Factor 1			Factor 2			Factor 3			Factor 4	
Item	T	F	M	T	F	M	T	F	M	F	M
1 - Enjoy	.85	.64	.93	.49	.36	.43	.32	.07	-.34	.36	.30
2 - Interested	.74	.63	.89	.46	.10	.48	.22	.09	-.42	.36	.22
3 - Like	.86	.81	.91	.57	.38	.51	.40	.30	-.49	.13	.19
4 - Pleasurable	.73	.78	.71	.69	.38	.70	.25	.45	-.23	.41	.08
5 - Absorbed	.57	.51	.49	.35	.44	.20	.23	.36	.18	.51	.63
6 - Fun	.81	.57	.83	.42	.27	.34	.30	.25	-.14	.55	.42
7 - Energizing	.41	.28	.35	.33	.33	.30	.66	.78	-.28	.08	.80
8 - Happy	.72	.60	.71	.52	.38	.44	.59	.51	-.63	.37	.34
9 - Pleasant	.52	.66	.45	.70	.31	.72	.33	.46	-.35	.50	.06
10 - Good Phys.	.67	.30	.71	.56	.77	.48	.62	.30	-.56	.21	.51
11 - Invigor.	.40	.21	.35	.63	.82	.61	.34	.27	-.13	.26	.41
12 - Not Frustr.	.24	.10	.30	.19	.17	.15	.80	.80	-.85	.24	.11
13 - Gratifying	.42	.47	.44	.61	.54	.51	.56	.37	-.67	-.03	.17
14 - Exhilar.	.34	.53	.29	.81	.77	.80	.22	.22	-.21	.23	.07
15 - Stimulating	.33	.30	.22	.55	.22	.60	.10	.21	-.14	.70	.20
16 - Accomplish	.54	.73	.53	.70	.60	.60	.31	.22	-.33	.13	.22
17 - Refreshing	.58	.61	.52	.67	.67	.58	.60	.35	-.60	.16	.52
18 - Nothing	.68	.34	.70	.29	.31	.15	.35	.24	-.28	.74	.41

4.4 PACES Shortened Version

Based on the factor analysis results, that indicated four items with high loadings on one factor common to the three samples, a decision was made to further analyze the data to investigate a shortened version of PACES (items 1 to 4). The four items were summed together to form a short form PACES scale. The mean for the scale for the total sample was 25.84 with a standard deviation of 3.47. Item-total correlations ranged from $\underline{r}$=.55 to $\underline{r}$=.77. The internal consistency of the shortened scale was α = .87. The correlation between the short form PACES scale and the

original 18 item PACES was r=.84 (p<.001). In a similar vein, the retest shortened version had a mean of 26.10 with a standard deviation of 2.60. Item-total correlations ranged from r=.65 to r=.66 The internal consistency of the retest shortened version was α = .70. The test-retest reliability for the shortened PACES was r=.49 (p<.001). The correlation between the retest shortened version and the 18 item retest was r=.85 (p<.001). The short form PACES scale demonstrates strong internal consistency and is strongly correlated with the 18 item PACES. Overall, the shortened version was shown to have strong internal consistency and moderate reliability. It would be advisable to conduct further testing on a scale longer than four items but shorter than 18 items, in an attempt to establish stronger reliability.

The validity of the shortened version was investigated by examining its relationship to the five concurrent items (Table 10). The strongest positive correlation (for the total and retest sample) was obtained by item 22 - participate next year (r=.30 and r=.68 at p<.001). Item 19 - enjoy activity was positively correlated to the shortened version scale (r=.24 and r=.26, p<.001). The remaining concurrent items were also positively correlated to the shortened version, although item 20 (competing) was not significantly correlated (refer to Table 10). These results provide some evidence of validity for the shortened version of PACES.

Table 10

Correlations of the Shortened PACES with the Concurrent Indicators

	n	Item 19 (Enjoy)	Item 20 (Competence)	Item 21 (Challenge)	Item 22 (Partic. Next Yr.)	Item 23 (Tell Friends)
Total Sample (Item 1 to 4)	223	.24**	.10	.17**	.30**	.16*
Retest Sample (Item 1 to 4)	42	.26	.08	.18	.68**	.13

Chapter 5

Discussion

5.0 Discussion

The main impetus for this research was to investigate the reliability and validity of PACES in the youth (13 - 16 year old) sport setting (indoor soccer). More specifically, the researcher was interested in determining whether PACES can be utilized in the youth physical activity environment (are there comprehension difficulties, would the bipolar scale pose problems) and is PACES reliable over time. Do gender differences exist? Does PACES measure what it purports to measure, what would a factor analysis reveal (uni or multi-dimensions)?

5.1 The Use of PACES in Different Contexts

The descriptive statistics which consisted of means and standard deviations revealed a total sample mean of 109.71 (SD=14.26). These findings are comparable to Crocker's (1991) study on 392 youth sport camp participants (M=100.6, SD=16.14) and to the studies conducted by Kendzierski and DeCarlo (1991) with university students. Kendzierski and DeCarlo's (1991) first study utilized 44 undergraduate students in a control group riding a stationary bike and an external focus group riding a bike and listening to music. PACES scores for the control condition ranged from 28-119 with a mean of 81.05 (SD=21.08). The scores of the external focus group ranged from 56-126, with a mean of 96.37 (SD=17.98).

In study two, Kendzierski and DeCarlo (1991) utilized 37 undergraduates in two physical activity settings. One group was riding a

stationary bike and another group was jogging on a minitramp. PACES scores in the bicycling session ranged from 48-126, with a mean of 84.26 (SD=18.71). The jogging scores ranged from 35-126, with a mean of 87.95 (SD=19.74).

The means and standard deviations of PACES differed slightly when utilized with a variety of settings and with a range of ages. The youth sport camp participants and the soccer players had higher mean scores than the undergraduate students. The means also differed depending on the activity context. The soccer players involved in a volitional context had the highest mean score, the sport camp participants involved in a structured setting (may or may not have been encouraged to register for the camp) had a lower mean score and the undergraduate group involved in a laboratory setting had the lowest mean score. It appears that these initial statistics overall are quite similar, offering support for the versatility of PACES.

The high mean score for the youth soccer players suggests that the players enjoyed their sport. However, this sample of youths may not be representative of all youth soccer players.

5.2 Gender Similarities and Differences

An associated hypothesis was to examine gender differences in male and female responses to enjoyment. This research has provided some evidence for the existence of slight differences in the scores for the male and female youth soccer players (male M=105.38, SD=16.79 and female M=113.11, SD=10.82). It is uncertain, however, whether the higher female scores are due to differences in the soccer practises for the two

genders or whether there are gender differences in reactions to the same situation. This can only be addressed through future research wherein both genders are tested in the same context. Numerous studies (Brustad, 1988; Nicholls, 1984; Scanlan & Lewthwaite, 1984; Wankel & Sefton, 1989) have analyzed the existence of gender differences with respect to enjoyment in sport. The current literature reveals that there is no conclusive evidence to support or refute males experiencing greater sport enjoyment than females or visa versa.

Duda (1987) reported that boys tend to place a greater emphasis than girls on ego-involved goals rather than mastery goals (e.g. beating others, comparing skills against others in contrast to learning new skills). It has been postulated that ego-involvement in a task may undermine intrinsic interest (Nicholls, 1984). To the extent that intrinsic motivation and enjoyment are similar concepts these goal differences between sexes may be related to the enjoyment differences reported in this study.

In a study conducted by Gill et al.(1983) on young swimmers, boys rated achievement/status items as more important, whereas, girls rated friendship and fitness as more important. Another important finding of this study was that both females and males rated fun and skill development as very important. Coaching behaviours and parental pressure also has a strong influence on enjoyment. Behaviours depicting technical instruction and positive support are associated with higher levels of enjoyment (Smith et al., 1983). The influence of parents on enjoyment and fun was investigated by Brustad (1988). Lower perceived parental pressure and supportive parents were associated with higher enjoyment.

PACES individual item mean scores were examined to further investigate gender differences. A similar pattern emerged for the mean scores in that males and females both scored high on items 1 (enjoy it...) and 3 (I like it...) and low on items 7 (energizing...) and 12 (frustrating...). Gender differences were also investigated with respect to mean scores on the concurrent indicators of enjoyment. The results indicated that both genders agreed that they would participate next year (item 22 - $\underline{r}$=.44) and that the activity just completed was somewhat challenging ($\underline{r}$=.18).

The factor analysis also an indicated similarities in male and female responses. The analysis extracted four factors, one factor had an eigenvalue exceeding 2 (females = 6.76 and males = 8.13). Further examination of the factor loadings revealed that 4 items (item 1 to item 4) had high loadings (>.5) on the first factor common to both the female and male samples.

In general, similarities between responses for both genders were more striking than their differences. It is postulated that as opportunities and experiences for females increase, similarities are emerging in the way young male and female athletes view their physical activity and sporting experiences. This observation is supported by Brustad (1988), Scanlan, Stein & Ravizza (1989) and Wankel & Sefton, (1989), as their research also indicates little difference between genders in levels of enjoyment reported in sport.

5.3 Reliability of PACES

Strong internal consistency was hypothesized for PACES. For the current study, internal consistency of PACES was measured by Cronbach's (1951) coefficient alpha. The resulting coefficient in all four samples ranged from .88 - .91. The males, the total and the retest revealed the highest coefficients. Further analysis of inter-item and item-total correlations in all of the samples indicated that items 12 (frustration) and 15 (stimulating) were poorly predicted from the other items (R =.26 and R =.25 respectively). Crocker (1991), reported a similar pattern and he proceeded to delete these items in an attempt to develop a shortened version of PACES. Sometimes researchers establish a criterion level for correlation of .25 to .35, below which items are excluded from the scale (Green & Lewis, 1986, p.90). Higher reliability may have been achieved in this study if these items were eliminated from PACES. However, the high coefficients obtained for all the samples gives a strong indication that PACES has strong internal consistency as assessed by Cronbach's (1951) coefficient alpha of .91.

The current findings mentioned above are consistent with previous studies conducted on PACES internal consistency. Crocker's (1991) study on youth sport camp participants resulted in an α = .91. Kendzierski and DeCarlo's (1991) studies had an α = .96 in both conditions. The repeatedly high coefficient alpha engenders confidence that the items within the PACES are internally consistent.

Crocker's (1991) research and results also revealed high correlations between forms. His study of youth sport camp participants revealed a Guttnam Split-half reliability of .87, which is close to the

.88 value obtained by the youth soccer players in this study. the correlation between forms (total and retest) was r=.76, with a split half reliability of r=.88. The high correlations are significant indicators of internal consistency and parallel form reliability.

5.4 PACES Stability Reliability

The next hypothesis examined was the test-retest stability of PACES. Test 2 was administered one week following test 1 and under similar practice conditions, resulting in a Pearson product-moment correlation between test 1 and retest of r=.76, a significant correlation. A small sample (n=42) was employed due in part to the teams having difficulties in booking facilities, the proximity of the research to playoffs and the elimination of a few teams from further competition.

Kendzierski and DeCarlo's (1991) retest studies differed slightly, time 1 to time 2 on a stationary bike had a correlation of r=.60, whereas jogging on a minitramp had a r=.93. The differences in reliability for the two activities was assumed to relate to exercising at different intensities for the two bicycle sessions or to the size of the test-retest samples. The size of the sample relates to the stability of the estimates (Kendzierski & DeCarlo, 1991, p. 51). Similarly, the between tests correlation obtained from the soccer test-retest may also have been affected by similar conditions, the small retest sample and the nature of the practices from time 1 to time 2 (was difficult to control).

The retest means and standard deviations were slightly higher than the initial test means and standard deviations. This may be a result of a variety of reasons; the nature of practise 2, the previous days match result, the proximity of the practise to an upcoming match, the coach's behavior from one practise to the next or parental pressure. In a study conducted by Scanlan and Lewthwaite (1984) and Scanlan and Passer (1988), the dominant predictors of post-match stress were competitive outcome and the perceived amount of fun. The difference in PACES scores from test 1 to retest could also be related the random error which was difficult to eliminate. This type of error results from temporary conditions in the person, situation or measurement procedures that vary in magnitude from time to time (Green & Lewis, 1986, p.83). Due to the nature of these factors it would be expected that actual enjoyment would vary somewhat from time to time. Thus, the lower correlation between enjoyment at two time points, in contrast to that found for internal consistency at one testing would be expected.

In summary, PACES appears to consistently measure the same entity. There is a positive association between the items comprising PACES. The results of the test-retest support the dependability of PACES to measure accurately from time 1 to time 2.

5.5 Current Indicators of Enjoyment and PACES

Concurrent validity on PACES was determined by comparing the total score to five indicators thought to reflect enjoyment. It was hypothesized that these concurrent items would be parallel indicators of enjoyment and hence would have strong correlations with PACES. The

indicators with the strongest positive correlation were items 22 (participate next year...) and 19 (enjoy the activity...). The indicators with the weakest correlation were items 21 (challenging...) and 20 (competence...). In researching and designing the 5 additional items, it was hypothesized that all these items would be associated with enjoyment in physical activity or sport.

The current literature conceptualizes enjoyment as an individual's positive affective response to his or her sport experience which reflects feeling and or perceptions such as liking, pleasure and fun (Scanlan & Lewthwaite, 1984, p.32). The strong correlation of PACES score and item 19 (enjoy, r=.36 at p<.001) is a positive assurance that PACES is truly assessing the extent an individual enjoys doing an activity. The strong correlation of PACES score with item 23 (participate again, r=.25 at p<.001) encourages speculation of PACES ability to assess the nonperformance aspects of sport (Scanlan & Lewthwaite, 1984). These results emphasize the need for researchers to view enjoyment not only in terms of goal achievement and intrinsic motivation but to try to understand enjoyment as it relates in a wider context to an individual's life. Gorely (1991, p.10) suggests that an individual may be highly motivated to participate and learn new skills and through accomplishing this goal experience enjoyment. But if this individual encounters ridicule by his or her peers for performing the activity, then the amount of enjoyment derived may be compromised.

It should also be noted that item 20 (competence) also correlated strongly (r=.22) with PACES. It has been suggested that people are motivated when they feel competent (Harter, 1982, White, 1959). Several

recent studies have in part addressed the relationship between enjoyment and competence. Brustad (1988) found that a competence-like measure of motivation was related to enjoyment across a season of involvement in youth basketball players. Wankel and Sefton (1989) conducted two comprehensive studies on the determinants of fun in youth hockey and ringette players. Their findings revealed that those boys reporting higher fun levels rated themselves as having played better than those reporting low fun levels. In their season-long investigation of fun they found that "how well one played" was the second most important predictor of fun. In light of the previous studies indicating the importance of competence to enjoyment, the current results indicating a correlation of .22 ($p<.001$) between the PACES score and competence can be interpreted as adding support for the construct validity of PACES.

The positive correlation of PACES score and item 21 (challenging, $r=.18$) is supported by the current literature. Csikszentimihalyi (1990) postulates that people are motivated to meet challenges. Chalip et al., (1984) define enjoyment in terms of a balance between the challenges of an activity and the perceived skills of a participant. When a participant's perceived skills match the perceived challenges of a task, then the person is more likely to enter the flow state and report greater enjoyment. Similarily, Wankel and Sefton (1989) found that level of challenge in a game was consistently one of the best predictors of fun for ringette and hockey players.

The strong correlation with item 22 (participate again, $r=.44$) coincides with the current literature. It is well documented that people are more likely to repeat a behavior when they enjoy what they

are doing (Graef et al., 1983). Duda and Tappe (1988) suggest that it seems unlikely that people will continue participating in a free choice activity if they are not enjoying themselves. The soccer youth involved in the PACES study were voluntarily performing drills or skill progressions at their practices. Quite often in a practice situation, the coach structures the session, but the players inherently control what transpires. In the older age groups, the youth definitely have the final decision to attend a practice or to commit their time elsewhere. Robertson (1990) provides further explanation in his study on participation motives of Australian youth. He asked the youths, "Why did you stop playing sport?". Their responses concentrated on negative reasons, attraction of other sports, other life attractions and life conflicts and injury or illness. On the other hand, Robertson (1990) asked the youths, "What do you like most about sport?". Their responses concentrated on having fun, learning skills , competing, performing well, being with friends, having excitement and getting a trophy. Overall, the importance of enjoyment and reduction of dissatisfaction is paramount to the decision to continue participation in youth sport.

In summary, the relationship between enjoyment and the concurrent indicators is a complex one. Enjoyment is a broad construct with the potential to be influenced by any aspect of participation, whether achievement or non-achievement oriented. The indicators of enjoyment are likely to vary both within and between individuals and across situations.

5.6 The Single Factor Solution

Lastly, PACES was analyzed utilizing orthogonal factor analysis. This type of analysis enabled the researcher to discover which items in PACES form coherent subgroups of items that correlate. Factor analysis on PACES provided further insight into the construct of enjoyment and its relation to the sport setting.

The hypothesis stated that one factor would be revealed when PACES was examined by orthogonal factor analysis. The resulting scree plot produced an estimate of the percent of variance for each factor. PACES scree plot revealed a definite distinction between the first factor and the remaining factors. A similar pattern was evident when the eigen values were examined. These results suggest that PACES may be assessing a uni-dimensional construct. Similar findings were reported in Crocker's (1991) study on youth sport camp participants.

Further examination indicated that four items (item 1 to 4) had high loadings (>.5) on the first factor common to all three samples (total, male and female). The four items can be characterized as an individual's positive feelings about the activity just completed. The distinct factor is composed of feelings of enjoyment, interest, liking and pleasure. These feelings may be labelled as the "positive affect" towards an activity. Tabachnick and Fidell (1983) suggest the inspection of the high correlate variables to ensure that they are distinct and not just one variable. How the four items in PACES differ from one another is a matter of definition and delimitation. Enjoyment and pleasure are very similar variables involving feelings of satisfaction and delight. Liking and interest are very distinct

variables referring to affection or preference for an activity and being inclined or engaged towards an activity. The "positive affect " represented by the four items provides strong support for the hypothesis postulating the existence of one factor. The first factor accounted for most of the common variance (43.3%). Factor 2 and factor 3 did not add much to the interpretation of the items (7.0% and 6.1%).

The factor analysis was also utilized to compare the male and female responses to PACES. It is important to note that the same procedures were employed at each stage of the analysis (same questionnaire, extraction and rotation techniques). Tabachnick and Fidell (1983) provide the researcher with a series of questions to facilitate the inspection of the matrices for both groups. "Did both groups generate the same number of factors? Do almost the same variables load highly on the different factors? Could you use the same label to name factors for the two groups?" (p. 413). The factor analysis of male and female matrices for PACES reveals that both groups extracted four factors. However, only one factor had an eigenvalue exceeding 1. The same four items (item 1 to 4) had high loadings on factor one (>.5) and therefore the same factor label could be used for both groups. The remaining three factors combined accounted for 20.3% of the variance for the females and 20.9% of the variance for the males. In both samples, factor 2 resulted in high loadings on items 11 (invigorating), 14 (exhilarating), and refreshing. Factor 3 for the male and female sample had no distinct patterns. However, factor 4 for both samples had a high loading on item 7 (energizing). In conclusion, factor 2 may offer some additional interpretation to the dimensionality of PACES.

PACES factor structure provides significant results to support the hypothesis that female and male samples have similar factor patterns. Previous research on gender differences and enjoyment in sport have revealed inconsistent and inconclusive findings. Gould et al., (1983) indicated that female swimmers place greater emphasis on fun and friendship than males. Whereas, Duda (1987) and Nicholls (1984) postulated that boys were ego-involved, focusing on competition and outcome. If these findings were true, the males should report lower levels of enjoyment. While the females should report higher levels of fun. However, Wankel and Sefton (1989) found that there was no consistent association of sex and level of fun reported. The current study revealed that although the females scored slightly higher on PACES, both genders agreed that enjoyment, interest, pleasure and liking were important to the overall enjoyment dimension. These findings support the suggestion that there is little difference in the factors associated with positive affect for boys and girls (Brustad, 1988) and that similarities are emerging in the way young male and female athletes view their competitive experience.

5.7 The Shortened PACES Instrument

The short form PACES (item 1 to 4) demonstrated strong internal consistency (α = .87) and was strongly correlated to the 18 item PACES (r=.84). The above results were similar to Crocker's (1991) study utilizing a 10 item shortened PACES, revealing an α = .87 and a correlation between short form and 18 item PACES of r=.96. Crocker (1991) suggests, "... based on the advantages of a shorter test and the

psychometric characteristics of the short form, it is recommended that researchers employ the short form PACES" (p. 4). This is further substantiated by the moderate reliability displayed by the shortened PACES retest. The shortened PACES retest revealed an α = .70 and test-retest reliability of r=.49 ($p<.001$). The correlation between the retest shortened version and the 18 item retest was $r=.85$ ($p<.001$).

The validity of the shortened version was investigated by examining its relationship to the five concurrent items. The five concurrent items were positively correlated to the shortened version. The correlations ranged from $r=.10$ to $r=.30$. These results provide some validity to the shortened version PACES. However, further research on a scale with more items than 4 and less than 18 would be valuable and may result in higher reliability.

Chapter 6

Summary and Recommendations

6.0 Summary

In designing the current study a large sample size (n=223) was drawn to permit factor analysis to examine the dimensionality of PACES. As well, it enabled an examination of gender differences in PACES scores. The sample comprised of youth soccer players, enabled the researcher to examine the applicability of PACES to populations other than university students. The activity chosen (soccer) extended application of the scale to an environment unlike the laboratory setting utilized by Kendzierski & DeCarlo (1991). The current study was conducted during a practice situation. This enabled the researcher to control extraneous factors to a considerable extent. Whereas, the administration of the questionnaire following a game may artificially elevate or deflate levels of enjoyment dependent on the outcome and other game influences.

In reviewing the hypotheses, it is evident that the youth soccer environment resulted in similar descriptive statistics to those reported for PACES in other context by Crocker (1991) and Kendzierski & DeCarlo (1991). These similar results support the versatility of PACES application to a variety of settings and ages. The current study also examined gender differences in male and female responses to enjoyment. In general, similarities between the genders were more striking than the differences. This result is supported by Brustad (1988), Scanlan, Ravizza & Stein (1989), Wankel and Sefton (1989), reporting minimal gender differences between genders in level of enjoyment reported from sport.

Strong internal consistency was hypothesized for PACES. Internal consistency of PACES as measured by Cronbach's (1951) alpha was .91 for the total sample, .88 for the females and .91 for the males. The current study on PACES internal consistency yielded results similar to those for previous studies (Crocker, 1991, α = .91, Kendzierski and DeCarlo, 1991, α = .96). The repeatedly high alpha provides the researcher with confidence that the items within PACES are internally consistent for adolescents as well as for adults.

A seven day test-retest on the reliability of PACES, resulted in a Pearson product-moment correlation of r=.76 (p<.001). Given that it would be expected that actual enjoyment would vary somewhat from time to time, these results support the dependability of PACES to measure accurately from time 1 to time 2.

The concurrent validity of PACES was examined by correlating the results of the scale with five single item indicators thought to reflect enjoyment. PACES was positively correlated with: "will you participate next year" (r=.44, p<.001), "enjoyment of the activity" (r=.36, p<.001),"will you tell your friends" (r=.25, p<.001), "how well did you play" (r=.22, p<.001) and "how challenging was the activity" (r=.18, p<.01). These positive correlations support the view of many researchers that enjoyment is a broad construct with the potential to be influenced by many aspects of participation, whether achievement or non-achievement oriented or intrinsic or extrinsic oriented. PACES appears to be assessing the construct of enjoyment, reflected in concepts such as liking, pleasure, intentions to participate next year and telling friends about the activity.

An orthogonal factor analysis, with VARIMAX rotation, produced a one factor solution which accounted for 43.3% of the variance in the overall sample (45.2% for the male sample; 37.6% for the female sample). The analysis found 4 items (item 1 to item 4) with high loadings (>.5) on the first factor common to all three samples (male, female and total). These results suggest that PACES may be assessing a uni-dimensional construct. These same findings were evident in Crocker's (1991) study on youth sport camp participants. The common factor to all three samples is composed of feelings of enjoyment, interest, liking and pleasure.

Further analysis of PACES, provided support for a shortened version of the 18 item scale. The short form PACES (item 1 to 4) demonstrated strong internal consistency (α = .87) and was strongly correlated to the 18 item PACES (r=.84). Furthermore, moderate reliability was displayed by the shortened PACES retest. The shortened PACES retest revealed internal consistency of α = .70 and a test-retest reliability of r=.49 (p<.001). These results parallel those reported earlier by Crocker (1991). His results demonstrated that a shortened version of PACES still had strong internal consistency and was strongly correlated with the 18 item original PACES. In the current study, he five concurrent items were also positively correlated to the 4 item scale. These results provide some evidence of validity for the shortened scale.

In summary, the overall pattern of results support the reliability of PACES in the organized youth sport environment and provide additional support for the validity of the instrument. Further research is

required to establish the validity of PACES and to investigate its applicability for use in unstructured youth activity settings (e.g., informal play settings).

6.1 Recommendations for Future Study

Future research should address the administration of PACES in a more spontaneous youth-controlled activity context (informal play) and in other team and individual sports. This is necessary to assess the utility of PACES in other activity settings. Similarly, a larger sample of youths would also permit researchers to examine the existence of age differences, social and cultural differences in sport enjoyment.

In order to further investigate the possibility of gender differences in response to sport enjoyment, future research should focus on the administration of PACES in a mixed gender sport context.

To ensure the validity and reliability of the shortened PACES, future studies will need to be conducted utilizing large samples, various ages and different sport or physical activity contexts.

References

Alberta Recreation and Parks. (1983). Sport Policy Statement for the Ministry of Recreation and Parks.

Brustad, R.J. (1988). Affective outcomes in competitive youth sport: The influence of intrapersonal and socialisation factors. Journal of Sport and Exercise Psychology, 10, 307-321.

Chalip, L., Csikszentmihalyi, M., Kleiber, D. and Larson, R. (1984). Variations of experience in formal and informal sport. Research Quarterly for Exercise and Sport, 53 (2), 109-116.

Comrey, A.L. (1983). A First Course in Factor Analysis. New York: Academic Press.

Crocker, Peter. (1991). Factor validity of the physical activity enjoyment scale for youth sporting populations: The development of a short form. Unpublished manuscript, University of Saskatchewan.

Cronbach, L.J. (1951). Coefficient alpha and the internal structure of test. Psychometrika, 16, 297-334.

Csikszentmihalyi, M. (1975). Play and intrinsic rewards. Journal Humanistic Psychology, 15 (3), 41-62.

Csikszentmihalyi, M. (1990). Flow: The psychology of optimal experience. San Francisco: Harper and Row Publishers.

Csikszentmihalyi, M. and Larson, R. (1984). Being adolescent: Conflict and growth in the teenage years. New York: Basic Books, Inc. Publishers.

Deci, E. (1975). Intrinsic motivation. New York: Plenum.

Deci, E., Betley, G., Kahle, J., Abrams, L. and Porac, J. (1981). When trying to win: Competition and intrinsic motivation. Personality and Social Psychology Bulletin 7, 79-83.

Deci, E. and Porac, J. (1978). Cognitive Evaluation Theory and the study of human motivation. In Lepper, M. and Greene, M. (Eds.). The hidden costs of rewards: New perspectives on the psychology of human motivation (pp. 149-176). Toronto: John Wiley and Sons.

Deci, E. and Ryan, R. (1987). The support of autonomy and the control of behavior. Journal of Personality and Social Psychology 53 (6), 1024-1037.

Dishman, R. (Eds.). (1988). Exercise adherence: Its impact on public health. Campaign: Human Kinetics Books.

Dishman, R. and Dunn, A. (1988). Exercise adherence in children and youth: Implications for adulthood. In Dishman, Exercise adherence, p. 155-200.

Duda, J. (1989). Goal perspectives and behavior in sport and exercise settings. In C. Ames and M. Maehr (Eds.), Advances in Motivation and Achievement. (Vol. VI, pp. 81-115). Greenwich, CT: JAI Press.

Duda, J. (1987). Toward a developmental theory of children's motivation in sport. Journal of Sport Psychology, 9, 130-145.

Duda, J. and Tappe, M. (1988). Predictors of personal investment in physical activity amoung middle-aged and older adults. Perceptual and Motor Skills, 66, 543-549.

Fine, G.A. (1989). Mobilizing fun: Provisioning resources in leisure worlds. Sociology of Sport Journal, 6, 319-334.

Fry, D., McClements, J. and Sefton, J. (1982). A report on participation in the Saskatoon Hockey Association. Saskatoon, Canada. Sask Sport.

Gill, D., Gross, J. and Huddleston, S. (1983). Participation motivation in youth sports. International Journal of Sport Psychology, 14, 1-14.

Gorely, P. (1991). Determinants of Enjoyment in Adult Squash: Development of the Squash Enjoyment Inventory. Unpublished Masters Thesis, University of Western Australia.

Gould, D., Fetz, D., Horn, T. and Weiss, M. (1983). Reasons for discontinuing involvement in competitive youth swimming. Journal of Sport Behavior, 5, 155-165.

Gould, D. and Petlichkoff, L. (1988). Participation motivation and attrition in young athletes. In Smoll, Frank (Eds.) Children in sport (pp. 161-178). Champaign: Human Kinetics Books.

Graef, R., Csikszentmihalyi, M. and Gianinno, S. (1983). Measuring intrinsic motivation in everyday life. Leisure Studies, 2, 155-168.

Green, L.W. and Lewis, F.M. (1986). Measurement and evaluation in health education and health promotion. Palo Alto, CA.: Mayfield Publishing Company.

Harter, S. (1978). Effectance motivation reconsidered. Human Development, 21, 34-64.

Harter, S. (1982). The Perceived Competence Scale for Children. Child Development, 53, 87-97.

Hellstedt, Jon. (1990). Early adolescent perceptions of parental pressure in the sport environment. Journal of Sport Behaviour, 13, (3), 135-145.

Iso-Ahola, S. (1980). The social psychology of leisure and recreation. Dubuque, I.A.: W.C. Brown.

Iso-Ahola, S. (1989). Motivation for Leisure. In E. Jackson and T. Burton. Understanding Leisure and Recreation: Mapping the Past, Charting the Future (pp.247-280). State College, PA: Venture Publishing, Inc.

Kendzierski, D. and DeCarlo, K. (1991). Physical activity enjoyment scale: Two validation studies. Journal of Sport and Exercise Psychology, 13, 50-64.

McAuley, E. and Tammen, V. (1989). The effects of subjective and objective competitive outcomes on intrinsic motivation. Journal of Sport and Exercise Psychology, 11, 84-93.

Nicholls, J.G. (1978). The development of the concepts of effort and ability, perceptions of own attainment and the understanding that difficult tasks require more ability. Child Development, 49, 800-814.

Nicholls, J.G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice and performance. Psychological Review, 91 (3), p.328-346.

Nicholls J. and Miller, A. (1984). Development and its discontents: The differentiation of the concept of ability. In J. Nicholls (Ed.) Advances in motivation and achievement : The development of achievement motivation (pp. 185-218). Greenwich: JAI Press.

Norusio, M. (1988). SPSS/PC+ Advanced Statistics. Chicago, Illinois: SPSS Inc.

Nunnally, J. C. (1978). Psychometric Theory (2nd Ed.). New York: McGraw-Hill.

Ommundsen, Y. and Vaglum, P. (1991). Soccer competition anxiety and enjoyment in young boy players. The influence of perceived competence and significant others' emotional involvement. International Journal of Sport Psychology, 22, 35-49.

Pagano, Robert. (1990). Understanding Statistics in the Behavioral Sciences (3rd Ed.). St. Paul, Mn.: West Publishing Co.

Passer, M. (1988). Determinants and consequences of children's competitive stress. In Smoll et al. (Eds.). Children in sport (pp. 67-78). Champaign: Human Kinetics Books.

Roberts, G. and Duda, J. (1984). Motivation in sport: The mediating role of perceived ability. Journal of Sport Psychology, 6, 312-324.

Robertson, I. (1990). Participant Motivation, Coaches and Enhancing the Performance of Young Athletes in Sport. University of South Australia, Magill.

Ryan, R., Mims, V. and Koestner, R. (1983). Relation of reward contingency and interpersonal context to intrinsic motivation. Journal of Personality and Social Psychology, 45 (4), 736-750.

Scanlan, T. and Lewthwaite, R. (1984). Social psychological aspects of competition for male youth sport participants. Journal of Sport Psychology, 6, 208-266.

Scanlan, T., Ravizza, K. and Stein, G.L. (1989). An in-depth study of former figure skaters: I. Introduction to the project. Journal of Sport and Exercise Psychology, 11, 54-64.

Scanlan, T. and Simons, J. (1992). The construct of sport enjoyment. In G.C. Roberts (Ed.). Motivation in Sport and Exercise (pp.199-214). Champaign, IL: Human Kinetics.

Smith, R., Zane, N., Smoll, F. and Coppel, D. (1983). Behavioral assessment in youth sports: Coaching behaviours and children's attitudes. Medicine and Science in Sports and Exercise, 15, 208-214.

Tabnachick, B. and Fidell, L. (1983). Using Multivariate Statistics. New York: Harper and Row Publishers.

Valeriote, T. and Hansen, L. (1988). Youth sport in Canada. In Smoll, Frank (Eds.). Children in sport (pp. 25-30). Champaign: Human Kinetics Books.

Vallerand, R., Gauvin, L. and Halliwell, W. (1986). Effects of zero-sum competition on children's intrinsic motivation and perceived competence. Journal of Social Psychology, 126 (4),-472

Vallerand, R. and Reid, G. (1984). On the causal effects of perceived competence on intrinsic motivation: A test of Cognitive Evaluation Theory. Journal of Sport Psychology, 6, 94-102.

Wankel, L. (1985). Personal and situational factors affecting exercise involvement: The importance of enjoyment. Research Quarterly for Exercise and Sport, 56, (3), 275-282.

Wankel, L. and Kreisel, P. (1985). Factors underlying enjoyment of youth sports: Sport and age group comparisons. Journal of Sport Psychology, 7, 51-64.

Wankel, L. and Pabich, P. (1982). The minor sport experience: Factors contributing to or detracting from enjoyment. In Orlick T. et al. (Eds.). Mental training for coaches and athletes (pp. 70-71). Ottawa: Sport in Perspective, Inc.

Wankel, L. and Sefton, J. (1989). A season-long investigation of fun in youth sport. Journal of Sport and Exercise Psychology, 11, 355-366.

Weinberg, R. and Jackson, A. (1979). Competition and extrinsic rewards: Effect on Intrinsic motivation and attribution. Research Quarterly, 50 (3), 494-502.

Weiss, M. and Bredemeier, B. and Shewchuk, R. (1985). An intrinsic/extrinsic motivation scale for the youth sport setting: A confirmatory factor analysis. Journal of Sport Psychology, 7, 75-91.

Weisberg, H. and Bowen, B. (1977). An introduction to survey research and data analysis. San Francisco: W.H. Freeman and Company.

White, R.W. (1959). Motivation reconsidered: The concept of competence. Psychological Review, 66, 297-333.

Appendix I - Original PACES Questionnaire

Physical Activity Enjoyment Scale

*** Please rate how you feel **at the moment** about the activity you have been doing.

*** Circle one number.

1	2	3	4	5	6	7
I enjoy it						I hate it
I feel bored						I feel interested
I dislike it						I like it
I find it unpleasureable						I find it pleasureable
I am very absorbed in this activity						I am not at all absorbed in this activity
It's no fun at all						It's a lot of fun
I find it energizing						I find it tiring
It makes me depressed						It makes me happy
It's very pleasant						It's very unpleasant
I feel good physically while doing it						I feel bad physically while doing it

1	2	3	4	5	6	7
It's very invigorating invigorating						It's not at all
1	2	3	4	5	6	7
I am very frustrated by it						I am not at all frustrated by it
1	2	3	4	5	6	7
It's very gratifying						It's not at gratifying
1	2	3	4	5	6	7
It's very exhilarating						It's not at all exhilarating
1	2	3	4	5	6	7
It's not at all stimulating						It's very stimulating
1	2	3	4	5	6	7
It gives me a strong sense of accomplishment						It does not give me any sense of accomplishment
1	2	3	4	5	6	7
It's very refreshing						It's not at all refreshing
1	2	3	4	5	6	7
I felt as though I would rather be doing something else						I felt as though there was nothing else I would rather be doing

Appendix II - Additional Questions plus Concurrent Indicators

Physical Activity Study

Please complete.

Name: _____

Club Name: _____

Birthdate: _____

Please circle.

Gender: 01 Female 02 Male

Years playing soccer: 01 02 03 04 05 06 07 08 more

How much did you enjoy the activity you've just completed?

1 2 3 4 5 6 7
I did not enjoy it I enjoyed it a lot

How well did you play in the activity just completed?

1 2 3 4 5 6 7
I did not play very well I played very well

How challenging was the activity you just completed?

1 2 3 4 5 6 7
It was very challenging It was not challenging at all

Will you participate in the activity next year?

1 2 3 4 5 6 7
Yes, for sure No way

Will you tell your friends about this activity?

1 2 3 4 5 6 7
No way Yes, for sure

THE END - THANKS

Appendix III - Correspondence

January 15, 1992

Dear Parents:

As a graduate student at the University of Alberta in Recreation and Leisure Studies I'm conducting a study on individual's reactions to physical activity. Thus, I seek the cooperation of your son/daughter in completing a simple questionnaire. The questions are very easy to answer and should take no more than five minutes to complete. There are no right or wrong answers. You have my assurance that the information that your son/daughter provide in this questionnaire will be kept anonymous and confidential.

The answers provided by your son/daughter will help me to develop an instrument for future use in the sport and recreation field. It will enable coaches and administrators to design sport and recreation programs to meet the needs of the players.

Since a limited number of players have been selected, your son/daughters opinion is highly important to the success of this study. I therefore hope that you along with your son/daughter complete the attached consents form and have him/her return the "researcher's copy" to his/her coach at the next scheduled practise or game.

If you have any questions about this study or the questionnaire involved please feel free to contact Shona Schleppe, at 431-0520. A copy of the results will also be available upon request.

Thank you for your cooperation.

Sincerely,

Shona Schleppe
Graduate Student,
University of Alberta,
Recreation and Leisure Studies.

INFORMED CONSENT FOR RESEARCH PARTICIPATION

I,_____(please print your name) agree to participate in a research project conducted by Shona Schleppe to develop a questionnaire for assessing an individual's reactions to physical activity. I understand the project simply requires completing a short (26 item) questionnaire after a practice session. As part of this agreement, I understand that I may withdraw from the study at any time without prejudice. Further, I understand that my personal results will be kept confidential although they may comprise part of group data for use in a research publication.

_____ _____

Signature of Participant Date

_____ _____

Signature of Parent or Guardian Date

No._____

Player's Copy

INFORMED CONSENT FOR RESEARCH PARTICIPATION

I,_____(please print your name) agree to participate in a research project conducted by Shona Schleppe to develop a questionnaire for assessing an individual's reactions to physical activity. I understand the project simply requires completing a short (26 item) questionnaire after a practice session. As part of this agreement, I understand that I may withdraw from the study at any time without prejudice. Further, I understand that my personal results will be kept confidential although they may comprise part of group data for use in a research publication.

_____ _____

Signature of Participant Date

_____ _____

Signature of Parent or Guardian Date

No._____

Researcher's Copy